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DECEMBER 1991

U.S. PROCESSING SERVICES MARKET

1991-1996

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Market Analysis Program (MAP)

U.S. Processing Services Market, 1991-1996

MAPR1 • 506 • 1991

Abstract

This INPUT report, *U.S. Processing Services Market, 1991-1996*, provides forecasts and analysis for the transaction processing, utility processing, and other processing services submarkets. The five-year forecasts cover fifteen industry-specific and seven cross-industry markets. Leading vendors are identified, market share indicated, and strategies profiled.

The report discusses areas of vitality in the processing market together with issues and trends presently influencing processing services. It also provides recommendations on how vendors can take advantage of the key forces driving the market.

The report contains 129 pages and 66 exhibits.

Table of Contents

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Table of Contents (Continued)

Table of Contents (Continued)

Exhibits

Exhibits (Continued)

Exhibits (Continued)

Introduction

This report is part of a series of market analysis reports written each year by INPUT on the key segments (delivery modes) of the U.S. information services industry. The delivery modes analyzed during 1991 are as follows:

1. Applications Software Products
2. Turnkey Systems
3. Processing Services
4. Systems Software Products
5. Network Services
6. Professional Services
7. Systems Integration
8. Systems Operations

The first six delivery modes are covered in reports included as part of INPUT's Market Analysis Program (MAP), a planning service for information services vendors. The last two delivery modes are covered in market analysis reports included in INPUT's Systems Integration and Systems Operations programs.

A

Purpose and Organization

1. Purpose

This report analyzes the processing services delivery mode of the U.S. information services industry.

- The report includes five-year forecasts, an assessment of market drivers, analysis of competitive trends, and identification of leading vendors.

- The report assesses trends and events within the U.S. economy, the U.S. information services industry, and the processing services delivery mode to provide the reader with a comprehensive foundation for understanding this market sector and for anticipating future directions.

The report provides readers with insights and information that will help them:

- Review the forces shaping the market
- Develop internal corporate financial projections
- Identify new markets and product and services opportunities
- Assess the competitive trends
- Determine potential market directions
- Assist in prioritizing investments

2. Organization

This report is organized as described in Exhibit I-1. Each delivery mode report within the Market Analysis Program follows this format. The industry and cross-industry sector reports, described below, follow a very similar format.

This report is published in segments throughout the year to subscribers to INPUT's Market Analysis Program. Subscribers will receive the material as the research and analysis is completed, with the first chapters shipped in the second quarter. The forecast is shipped in the third quarter.

EXHIBIT I-1

Market Reports Format

I. Introduction
- Introduction and definition of the delivery mode and its substructure or segments.

II. Executive Overview
- Synopsis of the entire report, written at the end of the year.

III. General Business Climate
- An overview of the business climate within the information services industry as a whole and the particular market segment of each report.

IV. Information Systems Environment
- The information systems environment and user perspective as it relates to the specific delivery mode or market.

V. Vendor Issues and Trends
- An assessment of the delivery mode from the vendor point of view.

VI. Information Services Market Forecast
- Presentation of the information services market forecast by delivery mode and submode.

VII. Competitive Environment
- Discussion of the competitive environment for information services within the delivery mode—with market share analysis and vendor profiles.

VIII. Conclusions and Recommendations
- Summary of risks and opportunities.

A. INPUT Definition of Terms
- Definitions and descriptions of market structure and terms used throughout INPUT's reports.

B. Forecast Data Base
- A detailed forecast by delivery mode, submode, and industry/cross-industry sector. Contains a reconciliation to the previous year's Appendix B.

B

Scope and Methodology

1. Scope

This report addresses the U.S. information services industry for the systems software sector (delivery mode). It includes user expenditures that are noncaptive and generally available to vendors. Many large organizations have portions of their information services requirements satisfied by internal divisions. The resulting expenditure is not available for competitive bid by the general vendor community and is not included in INPUT's projections. The noncaptive distinction is important and is addressed in more detail in Appendix A.

a. Information Services Industry Structure

Exhibit I-2 defines the structure of the information services industry as used by INPUT in its market analysis and forecasts. The industry consists of eight delivery modes, each of which contains a number of submodes.

- *Delivery modes* are specific products and services that satisfy a given user need. *Market sectors* specify who the buyer is and *Delivery Modes* specify what the user is buying.

- INPUT develops a five-year forecast for the delivery mode and each of the submodes.

EXHIBIT I-2

Information Services Industry Structure—1991

Source: INPUT

INPUT also publishes market sector reports analyzing 15 industry and 7 cross-industry market sectors. These reports, published annually by INPUT, analyze the information services opportunities in industry sectors such as insurance, transportation, and discrete manufacturing—and in cross-industry sectors such as accounting, human resources and office systems.

The relationship between delivery mode forecasts and market sector forecasts is shown in Exhibit I-3.

For a more complete discussion of INPUT's information services industry structure and market sector definitions, please refer to INPUT's *Definition of Terms*.

EXHIBIT I-3

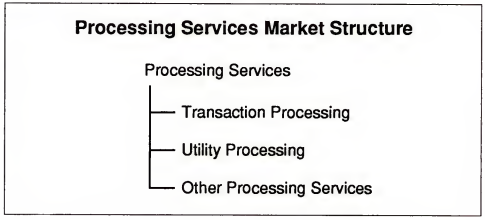
Delivery Mode versus Market Sector Forecast Content

Delivery Mode	Submode	Market Sectors		
		Industry Sectors	Cross-Industry Sectors	Other
Processing Services	Transaction	X	X	
	Utility			X
	Other			X
Turnkey Systems		X	X	
Applications Software Products		X	X	
Systems Operations	Platform	X		
	Applications	X		
Systems Integration		X		
Professional Services		X		
Network Services	Network Applications	X		
	Electronic Information Services	X		X
Systems Software Products				X

b. Delivery Mode Description

The processing services delivery mode, as shown in Exhibit I-4, is composed of transaction, utility and other processing services submodes.

EXHIBIT I-4



Processing services vendors market transaction, utility and other processing services alone and in combinations. There are also vendors that only market selected functions, such as microfilm or disaster recovery services, or just one of the primary services, such as transaction processing.

- The three submodes of the processing service delivery mode—transaction, utility and other processing services—are described in full in Appendix A.

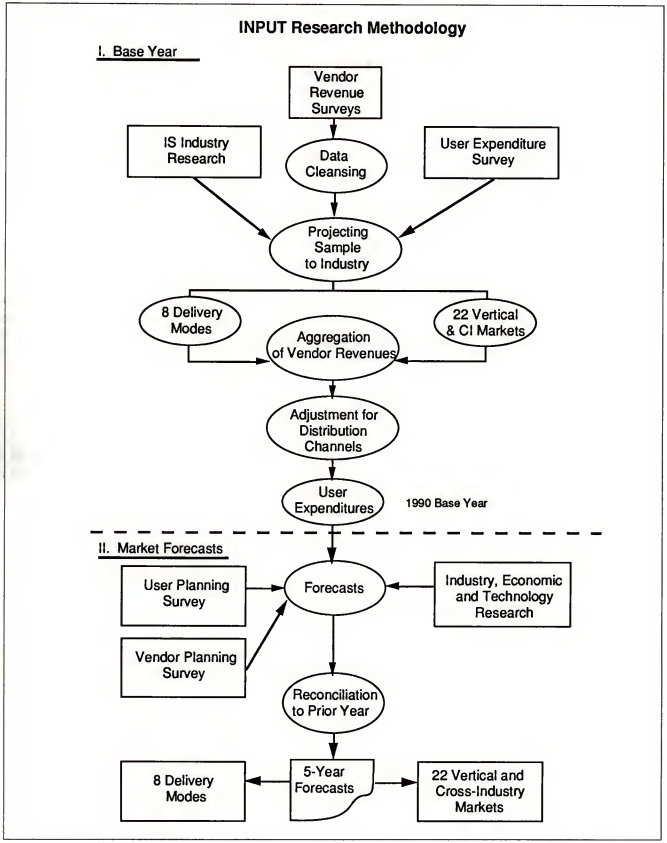
- Most of the processing services delivery mode is considered as purchased by industry sectors—that is, it is industry specific. The forecasts for processing services expenditures within the 15 industry sectors plus expenditures for cross-industry sectors adds to the total of forecast for the delivery mode as a whole.

- Processing services sold in conjunction with other services, such as network services, are included in the professional services sector.

2. Methodology

INPUT's methodology for market analysis and forecasting is summarized in Exhibit I-5. As in past years, INPUT has continued to survey information services vendors to determine their U.S. information services revenues, and to query information systems organizations about expenditures and outside services acquisition plans. INPUT interviewed vendors a second time to understand their views of market opportunities over the short and long terms.

EXHIBIT I-5



INPUT's annual forecasting process is broken into two major parts: base-year expenditure calculations and market forecasts. Each is briefly described below.

a. Base-Year Expenditure Calculations

- INPUT determines previous-year information services revenues for the eight delivery modes and 22 industry and cross-industry sectors for hundreds of vendors. Estimates rely upon interviews, public data, and INPUT's own estimates.
- The initial data are projected to represent the entire information services industry.
- Adjustments are made to eliminate duplications due to distribution channel overlap and to assure that captive information services expenditures are not included.
- The result is a base-year (1990) user expenditure for each of the 22 vertical and cross-industry sectors and the 8 delivery modes.

b. Market Forecasts

- In the forecasting step, INPUT surveys information systems executives to determine their projected expenditure levels, both in aggregate and for each of the outside information services categories.
- In addition, a second set of vendor interviews is conducted later in the year to obtain an understanding of how key vendors view the market and its opportunities.
- The result is a five-year forecast for each of the 22 vertical and cross-industry sectors and the 8 delivery modes. The delivery mode and market sector forecasts are correlated according to the diagram in Exhibit I-3.

To complete the process, INPUT reconciles its new forecasts with those from the previous year. Differences due to market restructuring and other factors are explained. One may use these projections to track INPUT's forecasts from year to year.

C

Economic Assumptions

INPUT forecasts are presented in current dollars (i.e., 1996 market sizes are in 1996 dollars, including inflationary forecasts). In developing the five-year forecasts, INPUT has incorporated economic assumptions for the U.S. economy as a whole.

The GNP and GNP Deflator growth rates used in INPUT's market projections for 1991 through 1996 are from the CONSENSUS™ forecast, a product of Blue Chip Economic Indicators of Sedona, Arizona. The Blue Chip CONSENSUS forecast is derived from a leading panel of economists representing leading financial, industrial, and research firms across the U.S. and has a 13-year track record of balanced and accurate projections.

The 1991-1996 assumptions are contained in Chapter VI, Information Services Market Forecast.

D

Related Reports

Related reports of interest to the reader are:

1. U.S. Markets

- *U.S. Application Solutions Market Analysis Report, 1991-1996*
- *U.S. Systems Software Products Market Analysis Report, 1991-1996*
- *U.S. Professional Services Market Analysis Report, 1991-1996*
- *U.S. Systems Integration Market Analysis Report, 1991-1996*
- *U.S. Systems Operations Market Analysis Report, 1991-1996*
- *U.S. Industry Sector Markets, 1991-1996* (15 reports on all major industry sectors—e.g., insurance)
- *U.S. Cross-Industry Sector Markets, 1991-1996* (7 reports on information services markets that serve all vertical industry sectors—e.g., accounting)

2. European Markets

- *The Western European Market for Computer Software and Services, 1991-1996*
- *Systems Software Products—Western Europe, 1991-1996*
- *Trends in Processing Services—Western Europe, 1991-1996*
- *Systems Integration Market Forecast—Western Europe, 1991-1996*
- *Systems Operations Market Forecast—Western Europe, 1991-1996*
- *Western European Network Services Markets, 1991-1996*

The European markets are also analyzed on a vertical basis for discrete and process manufacturing, insurance, banking and finance, and retail and wholesale distribution.

II

Executive Overview

A

User Issues

The continuing recession is still the major business concern of users of processing services, as shown in Exhibit II-1. Users are seeking opportunities to save costs, but they are reluctant to invest in the processing capabilities or the development of application systems that would allow processing work to be brought in-house.

EXHIBIT II-1

User Issues

- Internal pressure on sales and earnings
- Reluctance to invest in "processing services" applications
- Pressure on network capabilities
- Focus and priorities of end users
- Satisfaction of external requirements
- Recognition of need for disaster recovery

In order of average importance to respondents.

- It would take much effort to acquire the level of knowledge that vendors have about payroll or many other processing application systems.
- There might be a lengthy period of time before an investment in equipment and applications software systems to replace processing work could be regained with savings and other benefits.

- There are usually many other application needs that are much more critical to business success than moving processing work in-house.

One factor that can lead users to consider processing services versus in-house capabilities is the pressure some types of processing work can put on network capabilities, as noted in Exhibit II-1. Cash management and other processing that involves multiple data entry/delivery points could require changes to network plans if this work was handled in-house.

An overriding issue in deciding whether work should be handled by a processing services vendor or in-house is the business focus and priorities of end users.

- If end users are focusing on plans to improve order entry or inventory management, they could have little interest in projects to move payroll processing, credit card slip processing or other vendor processing work in-house unless there were substantial short-term savings that could help the company as a whole.

- End users have been active in moving processing work in-house when it provided meaningful benefits. For instance, users have taken steps to move technical, statistical and planning work in-house to workstations in order to gain more flexibility and to reduce the cost of running work.

One of the benefits of using processing services that users feel to be an issue is that vendors know about and take responsibility for reporting to government offices, banks and other necessary external functions.

Users also recognize the need for another processing vendor service today—disaster recovery services. Recent disasters and power losses have emphasized the need for this service.

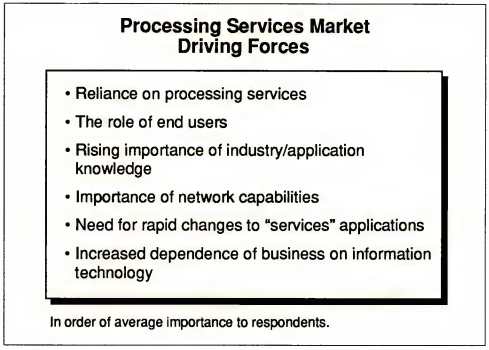
B
Driving Forces

The tendency of users to rely on the knowledge and application systems of their processing vendors is a driving force that maintains the use of processing services, as noted in Exhibit II-2. Vendors, however, cannot rely solely on users' reliance on their services.

- Competitors are always repricing their services and adding features in an effort to capture business.

- Some work always moves in-house or to other information services solutions; it is necessary to constantly add new clients to maintain as well as increase work.

EXHIBIT II-2



The influence of end users is becoming stronger in determining whether processing services, systems operations or other approaches will be taken to accomplish work.

- End users may not want to have internal resources taxed to support a job that could be outsourced or run at a processing service.
- End users may want to set up departmental capabilities to run client/server applications, and they may need aid in deciding what work can be run on a departmental basis.

In this environment, industry and applications knowledge is gaining more importance as a driving force.

- Users want to see demonstrations of new or proposed work, or talk with systems personnel that have experience in the areas of concern to them such as gaining more information about customers from processing POS data.
- Knowledge gained by the staff of processing vendors can be useful in attracting or supporting new jobs, such as the brokerage work that ADP has gained or the gaming applications for state government that GTech has developed.
- The knowledge that processing vendors have of certain industries, particularly banking, has led users to seek processing as well as systems operations services from these vendors.

The network capabilities that processing vendors such as EDS, FFM and Control Data (Telemoney) possess have driven users to obtain processing services work from all three vendors and systems operations work from the first two.

The need for rapid changes to services applications such as payroll and bank application systems has also been a driving force for the use of processing services, as indicated in Exhibit II-2.

- Users are interested in using vendors' experience in making frequent changes to applications software systems to meet the needs of government offices and clients.
- Users are also interested in using the ability that processing vendors have developed in scheduling changes in applications software as well as massive upgrades in processing capabilities and networks.

The experience that vendors have gained has made them more attractive to users as the use of information technology has become more complex and business has become increasingly dependent upon it. Large users have demonstrated that this is the case by using outsourcing to gain relief or aid in planning for future changes and upgrades in the use of information technology.

C
User Expenditures

As illustrated in Exhibit II-3, actual user expenditures for 1990 were close to the INPUT forecast of $17 billion, since the effect of the recession had been anticipated for 1990. The continuation of the recession and its intensity were not anticipated in 1990, however.

EXHIBIT II-3

Processing Services Market Overview
($ Billions)

1990 Outlook		1991 Outlook
1990 Forecast - 17	versus	1990 Actual - 17
1991 Forecast - 18.4	versus	1991 Forecast - 18.3
1990-1995 Forecast Growth Rate - 9% (CAGR)	versus	1991-1996 Forecast Growth Rate - 8% (CAGR)

- The continuation and depth of the recession caused the forecast for 1991 to be lowered from $18.4 billion to $18.3 billion.

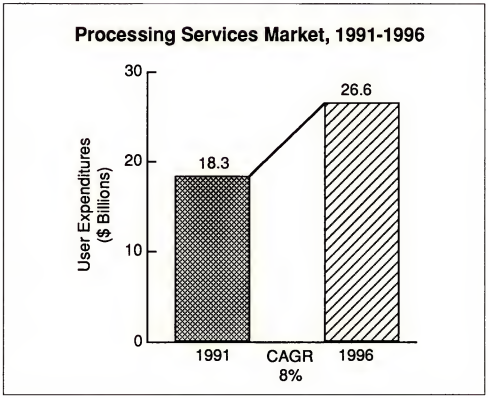
- The effect of the lengthened recession and the growth of outsourcing also led to a lowered forecast for growth over the planning period, from the 9% forecast for 1990 to 1995 to the forecast of 8% for 1991-1996.

The compound annual growth rate (CAGR) of processing services between 1991 and 1996 is forecast to be 8%, as shown in Exhibit II-4. This is the lowest CAGR for any information services delivery mode and is almost 40% below the average CAGR for all delivery modes. This low growth rate attests to the fact that processing services is a mature market.

Processing services, however, is forecast to rank fourth among delivery modes in user expenditures in 1996, since it had reached a high level of business before its growth rate began to dip.

Processing services has also suffered by having its fastest growing submode, systems operations, moved into a separate category.

EXHIBIT II-4



D

Vendor Competition

There are differences and similarities among the top five processing vendors listed in Exhibit II-5 that reflect the variation of business among other vendors.

EXHIBIT II-5

Leading Processing Services Vendors
U.S. Revenue, 1990

Rank	Vendor	Estimated Processing Services Revenue Share ($ Millions)	Market Share (Percent)
1	ADP	1,237	7
2	First Financial Management (FFM)	739	4
3	American Express ISC	725	4
4	Control Data	307	2
5	Covia	239	1

- Two vendors, American Express ISC and Covia, are subsidiaries of corporations with most of their business in non-information-services activities. About one-third of the top 20 processing vendors are in this category.

- Three of the top five vendors are information systems companies with significant amounts of business devoted to processing activities. About two-thirds of the top 20 vendors would fit this description.

- Three of the top five vendors serve the banking and finance market, and one of these—ADP—also serves the human resources (payroll) market. Banking and finance and payroll are two of the largest industry markets served by processing services. Over half of the top 20 vendors serve one or both of these markets.

- None of the top vendors serves only one industry or cross-industry market. None of the next five vendors does either, but there are about four of the second ten vendors that do. To move to higher levels of processing services revenue, it seems necessary to broaden the range of markets covered.

The top five vendors control about 18% of the market, and the next fifteen vendors control about 11% or 12%.

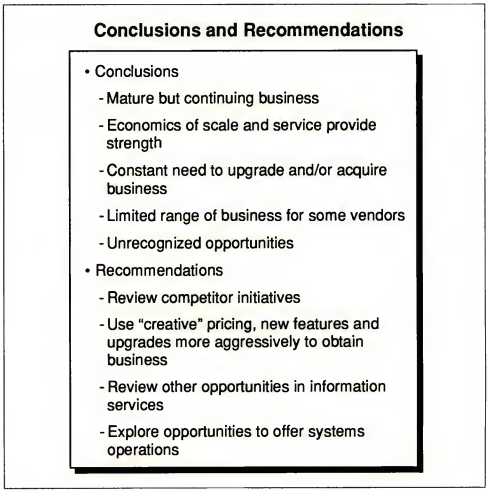
- This delivery mode does not seem to be dominated by the top vendors as much as some other modes, such as network services, systems integration or professional services are.
- However, service to many industry markets or submarkets is dominated by a small group of vendors such as ADP, Paychex and a few other vendors in payroll, and groups of vendors in credit card and bank processing.

E
Conclusions and Recommendations

1. Conclusions

The processing services business is mature, but as Exhibit II-6 shows, it will not wither and shrink.

EXHIBIT II-6



- Processing services has the lowest forecast growth between 1991 and 1996 among the eight information services delivery modes. It had the highest volume of user expenditures in the mid-1970s, but has fallen to third place now and will be exceeded by other modes in the future.

- Even though growth has slowed, there is no trend to move processing work in-house.

- Technical work being run on mainframes or supercomputers at vendors may be downsized and moved in-house to workstations, but the payroll, credit card, consumer market data and claims processing jobs, as well as many bank and other application needs, will continue to provide work for processing services vendors.

There will always be erosion of work. For instance, when some companies grow larger, they may move payroll in-house, but the economies of scale and services that processing vendors provide will ensure the continuation of most work as well as provide opportunities for new work.

- Vendors can point out the government reporting requirements that companies with in-house payrolls have not always met, and the reporting and inquiry capabilities vendors have used to meet banking or other external needs.

- Vendors can also point to their uptime, network and other capabilities, including the ability to support workstation systems at their clients as well as to upgrade equipment and application systems over time.

Vendors are faced with the need to constantly upgrade their capabilities and add features and new pricing options to bring enough new business in to replace what erodes and to meet growth targets. Not all processing services vendors are aware of the fact that there is a need to explore new markets and information services delivery modes, however.

- A number of vendors serve a limited set of markets with a limited set of products, although the vendors with the highest revenues from processing services—including ADP, First Financial Management and the other top ten vendors—serve multiple markets and/or utilize multiple information services delivery modes.

- Many vendors have not explored opportunities for offering software products or turnkey systems to users who want to go in-house. Nor have they explored opportunities for offering systems operations services in areas where they have industry and application systems knowledge in addition to the equipment, network and software products to support the work.

2. Recommendations

Vendors of processing services should make an effort to stay aware of activity by competitors, as suggested in Exhibit II-6.

- Awareness can help make sure that competitors are not introducing features or new pricing strategies that could take business away.

- Awareness can lead to opportunities for offering new services or entering new markets that competitors have evaluated as positive.

When new pricing strategies, features and notable upgrades are introduced, it should be done more aggressively:

- Users are much more aware of the actions of competitors that advertise in trade journals, newspapers or even on the radio in several cases. Some competitors use forceful messages and seek out the most effective media to use.

- Several vendors noted that competitors had used very forceful advertisements. One said that legal action was contemplated because the advertisement contained claims about relative prices of competition that weren't true, and could cause loss of business.

Opportunities to broaden services and particularly to offer systems operations should be considered strongly, as Exhibit II-6 suggests.

- Such moves will offset erosion in existing business.

- In the case of systems operations, it can provide an opportunity for faster growth and contracts for longer periods of time.

III

General Business Climate

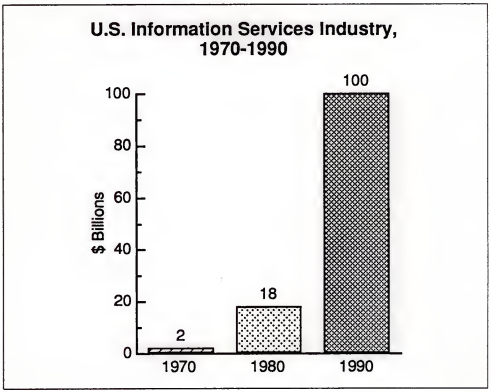
In this chapter INPUT provides an overview of the current business climate for the U.S. information services industry within the U.S. and for the processings services delivery mode.

A

1990 Results

In 1990, the U.S. information services industry reached a milestone, ending the decade at about $100 billion in size. As Exhibit III-1 shows, the industry increased in size over five times during 1980s and is 50 times larger than it was in 1970, when the industry represented $2 billion in user expenditures.

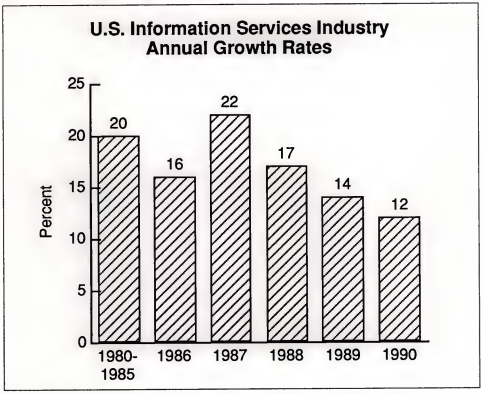
EXHIBIT III-1



During 1990, the industry grew at just under a 12%—from about $90 billion to $100 billion. As Exhibit III-2 indicates, 1990 reflects an intensification of a decline that started in 1989. The average annual growth during the first eight years of the decade was over 19%.

Worldwide, the industry continues to experience greater growth rates of close to 20%, and many U.S. vendors are experiencing growth that exceeds that of the U.S. industry as a whole. This growth is primarily due to international sales, but is also due to the focus on specific industry markets. Inflation rates and somewhat stronger economies are driving the industry to higher growth levels overseas.

EXHIBIT III-2



On a delivery mode basis:

- The smaller systems integration, systems operations, and network services delivery modes are growing faster than the rest of the industry.
- The software products sectors grew at or slightly above the industry average.
- The larger professional services and processing services sectors, as well as the smaller turnkey systems sector, are growing slower than the industry average.

Exhibit III-3 summarizes 1990 results.

EXHIBIT III-3

U.S. Information Services Industry
1990 Results Summary

- Reached the $100 billion milestone
- Growth 2 to 3 times the economy continues
- Growth slowed in 1990 relative to 1989
- Economy causes confusion

Growth in processing services fell to 8% in 1990—lower than the growth during any year in the past decade. In some vertical markets, growth of processing services was two to three times less than growth during 1988.

Although the economic downturn was the principal factor causing the drop in growth of information services, it did not have an equal impact on the use of processing services in different markets or on the vendors offering these services. Some major vendors as well as smaller ones experienced growth of over 10%. Other vendors experienced sharp drops in revenue and earnings. As a result, some vendors are evaluating changes in their relations with users and prospects that will enable them to be more responsive to needs for expanded processing services and to needs for outsourcing and other information services.

B

Driving Forces

There are a number of fundamental forces impacting the information services industry in the 1991-1992 timeframe that will have measurable impact on the overall growth rate for the 1991-1996 five-year period covered by this market analysis report. Each force will affect the industry as a whole, as well as each of the eight delivery mode sectors used by INPUT to analyze the industry and its key trends.

Exhibit III-4 identifies six primary driving forces impacting the U.S. information services industry. The impacts are multidimensional, fundamental, and long lasting. Each is discussed in this chapter and throughout this report.

EXHIBIT III-4

Information Services Industry Primary Driving Forces, 1991-1996

- The economy
- Globalization
- Influence of large vendors
- Outsourcing (buy versus make)
- Shifting technology foundation
- The changing buyer

C

Key Trends

1. Economic Impacts

The economy, as well as the overall size of the information services industry, is a significant factor in the user expenditure level for information services and software products.

- The inflation rate of the past few years has been much more modest than in the mid-1980s. INPUT forecasts and market sizes are in current dollars—thus lower inflation means lower growth.
- Real economic growth had been modest over the past few years prior to the recession that started in late 1990. Deferred and canceled expansion plans in all industry sectors certainly slow the expansion of information services expenditures.
- The shift of information processing to smaller computers lowers the software products investment, based on current pricing practices. Quantities of software products sold increase, but revenue levels grow at more modest rates.

In 1990, a year with little to no real growth in the overall economy and inflationary growth of about 5%, the information services industry grew 12%.

- INPUT's 1990 and 1991 economic assumptions were for nominal GNP growth of 5.4%; real GNP growth was 1% or less.

- At this point in 1991 (the second quarter), the economy remains in no-growth status, with some improvement expected by late in the year. At the same time, inflationary pressures are modest. INPUT expects another modest growth year in 1991 and again in 1992. The expected slow upturn will have the following positive and negative impacts on the U.S. information services industry in the near term:

- Positive impacts include:

  - Increased motivation to buy rather than make, in particular for larger systems requirements. Response time and impact on business operations are the key criteria.

  - The interest in systems operations, which permits organizations to redeploy capital investments and lower direct headcount, is being reinforced.

  - A tight economy is helping develop interest in lower-cost solutions that come from client/server-based applications software products.

- Negative impacts include:

  - Decision processes are lengthened in a tight economy, causing deferral of major information systems projects.

  - With tight information systems budgets, the internal information systems staff can be favored over contracted professional services vendors, thus negatively impacting a major segment of the industry.

2. Globalization

INPUT has cited globalization as a driving force for the past three years. During that time markets have opened, vendors have expanded their international focus, and users have begun to expect global capabilities.

- The European market is making progress toward a single market. Now 1992 is less than a year away and many changes are apparent. In addition, the European market is stronger than the U.S. market, although both are suffering in the current economy.

- The worldwide orientation of the larger services vendors is verified by the investments in Europe by Computer Sciences Corporation and Digital Equipment and by the ever-expanding interest of Japanese vendors in the U.S. information services industry.

The primary positive impact of globalization is the ability of larger vendors to balance their businesses in multiple markets with less impact from market downturns.

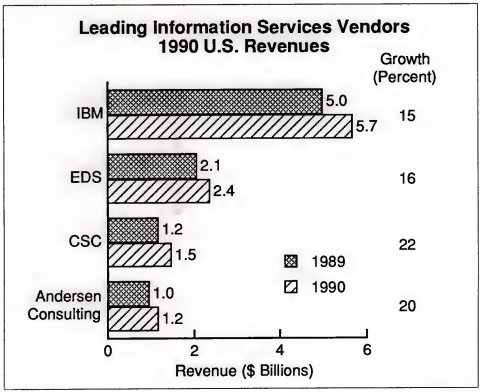
The primary negative impact from globalization is that it may make it harder for smaller vendors to grow and/or maintain independence.

3. Influence of Large Vendors

The influence of the larger information services vendors has increased significantly over the past few years.

- The newer systems integration and systems operations sectors, though smaller than more traditional sectors such as professional services and processing services, are growing faster than the traditional sectors and are dominated by the leading vendors.
- A number of larger vendors are growing faster than the overall market. Exhibit III-5 lists four of the largest information services vendors that can be considered multi- or full-service vendors and reveals their U.S. 1989 and 1990 information services revenues. All four increased information services revenues by at least 15%, greater than industry growth as a whole.
- Certainly there are numerous smaller firms that are also growing faster than the general market, but overall, the dominance of the larger vendors is increasing.

EXHIBIT III-5



The large-vendor influence is increasing in other ways as well.

- Starting with IBM, many large services vendors are making minority and majority investments to gain influence on technology, access to software products for remarketing, and market share.

- DEC's investment in Kienzle in Europe and EDS's investment in ASK Computer Systems are two examples of large vendors' seeking new channels and resources.

- Consolidation is also a factor. Mergers among the major accounting firms have reduced the number of players, but have given two of the firms (Ernst & Young and Deloitte Touche) added resources to follow the example of Andersen Consulting. A third—Price Waterhouse—is also experiencing significant growth in its information technology-based business.

The increasing use of business consulting linked to professional services has provided a means for the large accounting and consulting firms, as well as some large information services firms, to gain a greater share of the industry. INPUT expects this trend to continue over the next few years. The opportunity for the smaller, more specialized software product or services vendors is not disappearing, but it is changing character.

- Alliances with larger vendors will be essential, at least as secondary sales and support channels.

- Specialization—in terms of the technology used or the industry served or both—will become more important and common.

The continuing increase in the strength and impact of the larger vendors will have the following positive and negative impacts:

- Positive impacts include:

  - The larger vendors have the financial strength to minimize the risk of systems management services.

  - The larger vendors have financial resources available to invest in new technologies, often through investment in smaller and specialized firms.

- Negative impacts include:

  - Alliances may become a requirement for smaller technology firms to survive and prosper.

  - The dominance of the larger vendors will continue to grow.

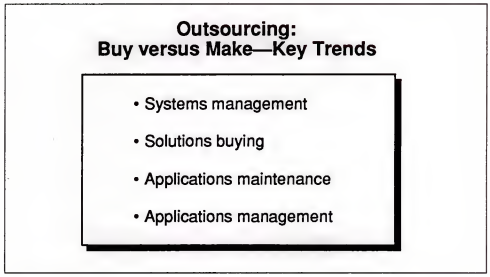
- Larger vendors tend to move more slowly, which will hamper development and acceptance of new technology. This slowness will provide opportunity to small vendors that seize technology initiative.

4. Outsourcing (Buy versus Make)

Since its inception, the information services industry (services and software products) has tended to outgrow the internal information services budget by continuously creating new products and services that permit the information systems function to outsource (buy versus make). This has always been an outsourcing industry. And though growth has slowed, a number of factors will permit continued growth that exceeds growth in the economy, the computer hardware sector, and the internal information systems budget.

Key trends in outsourcing are listed in Exhibit III-6.

EXHIBIT III-6



a. Systems Management

Outsourcing the management of information systems or at least significant elements of information systems continued to gain momentum during 1990. Helped more than hindered by the recessionary economy, the inclination of the general management of large organizations to consider outsourcing increased.

The ability to transfer much of the financial risk and, perhaps more importantly, the technological risk of a project or operations to a specialist has numerous attractions for general management.

- The attraction that will become more and more important will be the ability to disconnect the information technology part of the solution from the business decision. General management is concerned with

business results and does not want to debate the pros and cons of a technology. The appeal of the vendor's offer to take on risk either in a project (systems integration) or in operations (system operations) can only grow during the 1990s.

- The nature of most outsourcing activities within larger organizations often makes them favor the large vendors, adding impetus to the trend described above. If there is major risk involved, the buyer will bet on the company most able to accept risk and take responsibility.

- Perhaps the most important attraction is the ability of buyers to gain access to a broad information technology on an arm's-length business basis in a single decision.

  - The systems integration vendor can provide all the needed expertise in a new technology at the beginning of a project. There is no internal training lag time while the information systems staff gains the knowledge and experience required.

  - The systems operations vendor can provide a full utility-based service at a predictable cost over a number of years. This should make for fewer surprises from the overall information systems program.

b. Solutions Buying

Buying applications software is a well-established practice in the U.S. market where the use of packaged software is commonplace. However, the current change in the way U.S. organizations are managed and the availability of low-cost, high-performance client/server computing is bringing new impetus to the application solutions market.

- The fundamental decentralization of U.S. business management with the corresponding reduction of corporate staffs is creating a major requirement for business unit (distributed) application systems. Furthermore, the buyer is not an information systems professional and is willing to outsource (buy) with some customization.

- Just when the smaller business unit needs independent application solutions, there is a hardware revolution to support the need. Client/server technology provides affordable, high-powered computing.

The ability to find a VAR that can provide a package plus customized systems on client/server-based software is bringing the solution value of systems integration to the decentralized business unit.

c. Applications Maintenance and Applications Management

In line with the shift to outsourcing systems management to systems integrators and systems operations firms, the buyer is also seeking to gain more-defined relationships with more-traditional professional services vendors. Instead of contracting for temporary personnel, the buyer is beginning to contract for services like applications maintenance and applications management.

- Applications maintenance is contracted, 24-hour support of existing applications systems. The vendor provides a set level of services and interacts directly with the end user.

- Applications management is contracted management of development and maintenance of a set of applications. The vendor provides the software and all of the expertise and staff to assure that the application is successfully used over an extended period. Applications software products firms can become applications management vendors for their clients or let some other vendor do it.

5. Shifting Technology Foundation

Significant new technologies became available in the late 1980s and are gaining momentum in the 1990s. An underlying characteristic of much of this new technology is a shift in the technological foundation. Many elements of technology are shifting to new foundations.

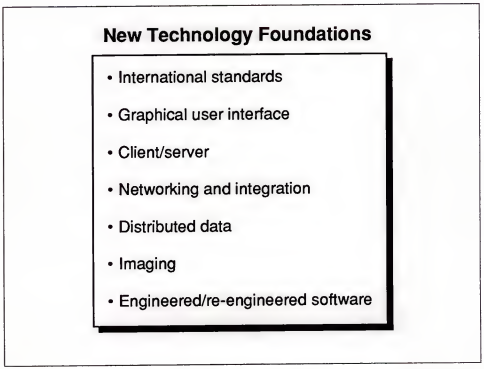
Exhibit III-7 lists the key elements of this shift in underlying technology. Each element is causing organizations to stop and rethink key aspects of their information systems infrastructure strategy. Rethinking can slow the adoption in the short term, and create new vendor opportunities over the longer term.

All of these new technologies and foundations cause confusion in the industry and with the buyer. Confusion slows buyers' and vendors' decision making. Strategies need to be revised and investment plans shifted, and education is required.

- Standards are driving every major computer manufacturer and software products developer to revise strategies and change product development plans. New products are delayed and then require longer initial sales introductions.

- The user interface of the personal computer in its graphical pull-down menu and windowing form will be the only interface acceptable to users from now on. The text-based interfaces of the 1970s and 1980s will no longer be tolerated. Every major software product developer is re-engineering the user interfaces to its products.

EXHIBIT III-7



- Downsizing, the common term for moving an application to a client/server-based installation, will be the greatest phenomenon of the early 1990s. Whether or not the installation is actually downsized, it will be moved to a new processing location and take on new characteristics. Major re-engineering of internal systems by the information systems function and a shift to buying server-based application products is under way. All of the impacts are not known. One, software products pricing based on the size of the platform, will have to change. Certainly some confusion exists and is impacting buying decisions.

- The growing use of PCs, workstations, and LANs has mandated a move to integrate the information networks of large and small organizations. Today's networking products permit the distributed applications that have been discussed for years but were never possible.

- The way data is stored and turned into information has been fairly constant since the creation of the first hierarchical DBMS in the early 1970s. Since then the challenge was to build data bases, not to consider building them with new types of components. The shift started with commercial use of relational DBMSs, but it is the distributed DBMS, and perhaps more importantly image processing, that will cause major re-engineering of the data base architectures of larger organizations. Major new investment is required and of necessity will come over time.

- The age of truly engineered and re-engineered software through CASE technology is dawning. In five years the approach to maintenance will have finally changed and there will have been major advances in programmer productivity.

The positive and negative impacts of the shift in technological foundation are listed below. Certainly over the five-year period of this forecast the positives greatly offset the negatives.

- Positive impacts from this shifting technology foundation include:
  - New types of solutions will become available.
  - The role of the end user in information systems can continue to expand.
  - Opportunities for new as well as existing vendors are created.
  - Application systems can be increasingly molded to the character of the organizations they support.
- Negative impacts are:
  - Any shift causes confusion and hesitation in the near term. The magnitude of the current technology shift could cause confusion and slow investment through the middle of the decade.
  - The size of the task to shift to client/server technology in organizations with large centralized systems causes conflicting priorities between re-engineering and meeting new requirements.
  - The technology shift now in process is creating a significant additional training and education requirement.
  - Growth is slowed while the new technology is understood and learned.

6. The Changing Buyer

The decision maker for the purchase of information services remained relatively constant until the late 1980s. The information systems executive and key staff (systems development and data center operations managers) decided when to go outside and who to contract with.

This leadership has changed significantly in the past few years and promises to change even further. As the information services vendor moves to provide a full long-term service or a full solution, the general manager is becoming the buyer. The impacts are significant.

- Technology becomes less important and the business or operational impact becomes more important.
- The impact of the information systems function becomes more consultative and less direct.
- The ability to try new ideas and approaches is increased.
- The time to completion is controlled by the organization's ability to afford, not the ability of information systems to develop.

D Summary

The year 1991 is exhibiting significant changes from the 1980s. The changes suggest more modest, but continued strong and stable, growth for the information services industry.

- An economy that does not shift quickly helps management make longer term decisions, albeit at a slower pace.
- A market of $100 billion that is strongly impacted by the direction of the larger vendors should be expected to grow somewhat slower.
- The increasing tendency of larger organizations to turn to vendors for services that include real and significant elements of systems management and have a solutions orientation will lead to larger, longer term decisions—decisions that can take longer but have a lasting impact.
- The shift in the underlying technology foundation is for the better—more valuable and productive applications solutions will result. But shifts bring re-engineering, reinvestment, and retraining—and require time and money.
- The role of the general manager concerning the deployment of information technology continues to increase. In many instances the general manager is more influential than the information systems manager, particularly regarding major decisions. Over time the general manager's influence will have positive impacts on the size and growth of the information services industry—as long as the vendors provide satisfaction.

Information Systems Environment

A

Current Usage Determinants

Use of processing services grew faster in some industries than in others in 1990, as shown in Exhibit IV-1.

EXHIBIT IV-1

Growth in Processing in Selected Industries

Industry	Growth in Calendar Year (Percent)		
	1988	1989	1990
Banking	16	11	10
Telecommunications	17	15	15
Discrete Manufacturing	8	6	6

- Between 1988 and 1990, the growth rate remained almost constant in discrete manufacturing.
- The growth rate fell by 12% in telecommunications and decreased by about 60% in banking and finance, where the economic downturn had more impact.

Slow growth rates were also reported in education, business services and the medical industry.

Despite the economic downturn, users report that expenditures grew at a rate of 8% in 1990.

- A group of vendors including First Financial Management and Paychex grew at rates above 12%, illustrating that a number of organizations increased their use of processing services.
- Some vendors are finding that their processing business is less attractive to clients and prospects, and they are losing market share.

Factors that encourage organizations to use processing services are listed in Exhibit IV-2.

EXHIBIT IV-2

Factors Encouraging Use of Processing

Factor	Average Importance to Respondents*
Application is not related to primary business functions (e.g., payroll)	4
For various reasons,vendor can run job more economically (brokerage back office)	3
Volume can vary considerably	3
Don't want to staff operations	3
Avoidance of investment in equipment/software	3
Available time at company processing centers is limited	3
Don't want to plan upgrade/manage application	2
Difficult to handle at an internal center serving multiple divisions	2

*Note: (5 = high; 1 = low)
Results rounded to nearest 0.5

INPUT obtained the information used in Exhibit IV-2 and other exhibits in this chapter from ongoing interviews with information services users and 25 recent interviews with clients of processing services who used payroll, accounting, mortgage, financial modeling, banking, distribution, manufacturing, engineering and other processing work.

The factors mentioned most frequently in Exhibit IV-2 relate to the type of job.

- Applications that are not related to the primary functions of a business, like payroll (for many but not all organizations)

- Applications that can be run more economically by vendors for various reasons—for example, back-office brokerage operations run by a vendor who provides pricing data

There are however, a number of factors mentioned in Exhibit IV-2 that relate to operational costs rather than the type of job:

- Variation in input volumes, incremental staffing and equipment costs, the cost of keeping applications up to date, and the costs of adding applications to the workload of existing centers are mentioned by respondents.

- The accumulated weight of these factors suggests that cost may be the primary driving force leading to the use of processing services in a number of organizations.

- The reduction of complexity in operations management also affects use of processing services in some situations.

When asked what led or is leading to the use of processing services, organizations report that saving money and/or time are chief reasons, as shown in Exhibit IV-3.

Another primary reason for using a processing vendor is the ability to take advantage of vendor networks, equipment, or software products.

Some organizations report that their primary reason is a desire to have work done by a vendor when it is more prone to operational complexity than is warranted by its benefits. They characterize this type of work as specialized jobs that a vendor may know more about, such as payroll, credit card processing or certain types of financial analysis.

EXHIBIT IV-3

Basic Reasons for Using Processing Services

Reason	Average Importance to Respondents*
Save money and/or time	3.5
Reduce work that has operational complexity	2.0
Obtain use of network, hardware or software facilities	2.0
Have a services vendor responsible for work	2.0
Limit size of IS staff and equipment	1.0

*Note: (5 = high; 1 = low)
Results rounded to nearest 0.5

In addition to the reasons that can drive organizations to use a processing service, vendors should also consider the characteristics that clients and prospects expect them to have:

- As listed in Exhibit IV-4, these characteristics focus on quality, timeliness, service and accuracy.
- Pricing is important but does not rank as high as the items listed above.
- Planning for future client needs and additional services can also have an effect on vendor selection.

EXHIBIT IV-4

Processing Services Characteristics Expected by Clients/Prospects

Reason	Average Importance to Respondents*
On-time availability or delivery of results	4.5
Low incidence of problems/mistakes	4.5
High quality: accuracy and neatness	4.0
Prompt response and action on inquiries	4.0
Reasonable pricing	3.5
Good planning for future needs of clients	3.0
Additional services that are offered: disaster recovery, microfilm, delivery and pick-up, data entry by vendor	2.0

*Note: (5 = high; 1 = low)
Results rounded to nearest 0.5

Technological capabilities that can influence the decision to use processing services or a particular vendor are shown in Exhibit IV-5.

- Network services that a vendor has available and inquiry capabilities rank highest among respondents. Banking and finance respondents were particularly interested in both.
- To some clients and prospects, processing capabilities for technical computations or large models were of great interest.

- There is also interest in graphics capabilities and microfilm output, as well as image processing. Several respondents mentioned the latter in terms of possible future needs.

Users noted that vendors of processing services must be attentive to present and future needs to retain business. It will no longer be sufficient to address a problem with software products and computing time, while paying little attention to clients. (Some clients complain about this type of treatment.)

Improvements in technology that enhance disaster recovery were not mentioned. Disaster recovery does not seem to be considered in conjunction with the use of processing services.

EXHIBIT IV-5

Technological Factors Encouraging Use of Processing Services

Reason	Relative Importance to Respondents*
Terminal or PC inquiry from client	3.5
Network availability	3.5
Terminal or PC data entry from client's office	3.0
High-speed processing	3.0
Graphics capabilities	2.5
New microfilm recorders/ retrieval units	2.0
Image processing capability	2.0

*Note: (5 = high; 1 = low)
Results rounded to nearest 0.5

B

Potential for Changing Services

As indicated in Exhibit IV-6, organizations that are using processing services see the possibility of reducing the volume of processing work in response to changing factors in the market.

- The factor that could have the greatest impact is the availability of tested software products that would perform the application well on a workstation/PC. This could encourage clients who run accounting, banking/finance and technical applications, among others, to move work in-house.
- The possibility of using a systems operations firm to take over processing services and perform a more comprehensive job was also mentioned by users of processing services.
- A rise in the cost of processing services was mentioned as a possible factor, but it was not given a high importance rating. There could be some margin for absorbing price increases or an expectation that prices will not increase.

EXHIBIT IV-6

Factors Encouraging Less Use of Processing

Factor	Relative Importance to Respondents*
Tested software product for application is available for workstations/PCs	3.5
Possibility of outsourcing	3.0
Professional services firms can provide adequate solution	2.5
Time is available at processing centers in organization	2.5
Cost of processing services	2.0

*Note: (5 = high; 1 = low)
Results rounded to nearest 0.5

The possibilities of moving work to workstations/PCs or outsourcing work that were mentioned—shown in Exhibit IV-6—are also identified as key alternatives to processing services in Exhibit IV-7.

EXHIBIT IV-7

Alternatives to Processing Services

Alternative	Average Importance to Respondents*
Use of dedicated minis or workstations/PCs	3.5
Processing at corporate centers	3.0
Outsourcing to systems operations processing vendor	3.0
Use of systems operations vendor	2.5
Shared processing with another user in company or externally	2.0

*Note: (5 = high; 1 = low)
Results rounded to nearest 0.5

Processing at corporate centers, other departments in the same organization, or even at other companies in a shared facility were also mentioned as possible alternatives.

Users of processing services regularly review alternatives, according to respondents. Vendors should maintain awareness of the thoughts of clients and determine if any deterioration of service (see Exhibit IV-3) or other factors as noted in Exhibit IV-6 are encouraging heightened interest in an alternative.

End users who are clients of processing services were considering alternatives to processing services as were top management and IS staff. However, as Exhibit IV-8 indicates, they are most interested in increasing their use of information systems and can quickly become interested in services that address their needs.

EXHIBIT IV-8

Impact of End Users on Processing Services

Impact	Average Likelihood Indicated by Respondents*
Potential user of additional services—processing or other information services	3.5
Presently use processing services	3.0
Advocate that processing work be brought in-house	2.0
Advocate the use of systems operations	2.0

*Note: (5 = high; 1 = low)
Results rounded to nearest 0.5

Vendors of processing services who have contact with end users could find that they offer opportunities for additional services, particularly for services and software products that can be linked to workstations/PCs on their desk tops.

C

Future Outlook

The possibility of adding new applications and services to the work provided to clients is one of the opportunities to which some clients feel processing vendors are not fully responding, as shown in Exhibit IV-9.

- Clients also report that they expect vendors to take a larger role in evaluating whether work could be moved in-house or combined with other in-house work and handled as a systems operations relationship. To maintain revenue from clients, vendors should participate in planning.

- Surprisingly, respondents also mention the fact that processing vendors are missing opportunities by not being active enough in bringing their services to the attention of non-users.

EXHIBIT IV-9

Opportunities That Processing Vendors May Be Missing

Opportunities Mentioned by Respondents
• Be the vendor who moves processing work in-house
• Move processing work to systems operations
• Bring the alternative of processing services to the attention of non-users
• Offer add-on applications and services

Some vendors of processing services may be more interested in offering other types of information services to clients.

- As noted in Exhibit IV-10, vendors of processing services are likely to be offering a variety of other products.
- Professional services are frequently mentioned, possibly because they appear to be the fastest means of reacting to a new problem.
- Software products, turnkeys, SI and outsourcing are also brought to the attention of clients.

The service that is conspicuous due to its absence is consulting, as shown in Exhibit IV-10.

- By mentioning other products rather than emphasizing their ability to perform consulting—work that would help prospects analyze objectives and evaluate information technology alternatives—processing services vendors may encourage processing clients to consult with other firms that recommend and implement SI or outsourcing solutions that the processing services vendor might have supplied.
- Processing services vendors should be prepared, through the use of alliances if necessary, to use consulting techniques and presentations when reviewing alternatives for future work.

EXHIBIT IV-10

Other Information Services Modes Provided by Processing Services Vendors

Services Mentioned	Average Frequency of Mention by Respondents*
Professional services	3.5
Systems integration	2.5
Electronic information services—EIS	2.0
Network applications	2.0
Applications software products	2.0
Systems software products	2.0
Turnkey systems	2.0
Systems operations	2.0

*Note: (5 = high; 1 = low)
Results rounded to nearest 0.5

At present, as indicated in Exhibit IV-11, clients of transaction processing services are as apt to plan to bring part or all of their processing in-house as to continue to use processing services.

- The expansion of work for clients that remain and the addition of new clients can enable processing services to grow.
- Providing additional services, particularly SI and outsourcing, can be additional opportunities for vendors.

EXHIBIT IV-11

Future Plans of Processing Users

Impact	Average Likelihood by Users of Processing Services*
Continue to use processing services	3.5
Bring part of processing in-house	3.5
Bring all processing services in-house	3.0
Use systems operations	3.0
Other: cooperative processing	2.0

*Note: (5 = high; 1 = low)
Results rounded to nearest 0.5

In addition to the transaction processing services that account for the bulk of services offered in this mode, there are two other types of processing services—utility processing and "other" processing services.

Utility processing covers the development and operation of jobs by users with the aid of vendor software products.

"Other" processing services include pickup and delivery of work, microfilm and other output, and data entry, which some clients feel are necessary ancillary services to transaction processing, as shown in Exhibit IV-12. These services were also mentioned in Exhibit IV-4 as necessary for vendors to offer in some situations.

"Other" services also include disaster recovery.

- This service is considered separate from transaction processing and the rest of the "other" processing services by respondents, due to its general importance.

- Information from respondents indicates that use of disaster recovery is beginning to grow at a faster rate since it is being considered and implemented for more sites within organizations.
- As Exhibit IV-12 indicates, some respondents are considering in-house alternatives to disaster recovery even though they feel that this capability is highly important and have questions or reservations about their own ability to provide it.
- Some respondents report that their management does not fully appreciate the consequences of slight or even larger gaps in disaster recovery and backup procedures, as noted in Exhibit IV-12.
- Respondents expect disaster recovery to become even more important as organizations appreciate just how fully their operations are dependent on information systems.

Utility processing was mentioned in regard to the characteristics and technical capabilities of processing services that were of interest to users (Exhibits IV-4 and IV-5).

EXHIBIT IV-12

Reaction to "Other" Types of Processing Services

Service	Reactions of Clients
Pick-up/Delivery	Necessary for some payroll and accounting
Microfilm	Necessary for some types of record keeping Will need as long as processing services are used
Disaster Recovery	Being considered for more individual sites than in the past Advantages are not fully appreciated by management in all cases In-house alternatives are being considered by a few companies Expected to increase in importance and usage

- More of this type of processing can be run in-house as workstations/ PCs increase in capability, according to respondents.

- There is always the potential for some utility processing when organizations have information services needs in excess of their capabilities.

Overall, respondents expect utility processing to grow less rapidly than the use of transaction processing services.
As illustrated in Exhibit IV-13, the expectation of respondents in general is for expanded use of transaction processing services.

- There are clients who expect to eliminate or reduce these services as well as clients who expect sizable increases.

- Allowing for both increases and decreases, the average expectation is close to 10%.

EXHIBIT IV-13

Growth of Processing Services Foreseen by Users and Prospects

Growth Rate Anticipated	Average Level of Expectations
10-15%	3
15-20%	2
5-10%	2
0-5%	1
Drop Service	1

*Note: (5 = high; 1 = low)
Results rounded to nearest 0.5

One complicating factor in exploring the future use of transaction processing services is estimating what effect the expansion of interest in systems operations will have.

The use of processing services appears to have become more volatile, but also more likely to grow than to decline.

- Vendors must become sensitive to the opportunities and service expectations of clients.
- Opportunities to aid in planning the use of information technology and in outsourcing and systems integration work should be considered.
- The role of the end user and the use of client/server technology by end users must be tracked. Applications might be segmented between end users and vendors in the future, allowing vendors to provide savings to end users in processing, network, graphics output and other costs.

Issues and Trends

A
Introduction

Before discussing the processing services market and competitors in the next two chapters, key issues and trends of buyers and vendors of processing services will be analyzed. This information was gathered from ongoing interviews that INPUT has conducted in the information services industry as well as 30 interviews focused on factors of importance in the processing services market.

1. Major Issues of Processing Services Buyers

The major concern of buyers is still the economic climate, as shown in Exhibit V-1.

EXHIBIT V-1

Processing Services
Major Buyer Issues

- Internal pressure on sales and earnings
- Reluctance to invest in "processing services" applications
- Pressure on network capabilities
- Focus and priorities of end users
- Satisfaction of external requirements
- Recognition of need for disaster recovery

In order of average importance to respondents.

- Internal pressure on sales and earnings makes buyers less willing to expand services or add features that will increase costs.

- However, buyers are also generally unwilling to invest in equipment and information services that would be required to take over the work of processing services. One systems planning manager said that his company would not even weigh alternatives for taking over the credit card, payroll and tax processing services that they make use of.

Processing services are still considered appropriate for many processing requirements that are not related to the chief or core function of a business, and that a vendor can do more economically due to economies of scale and/or due to specialized application knowledge that would be costly to acquire.

In addition to being reluctant to invest time and funds in processing services applications, a number of users report that they do not want to bring application systems in-house that will put pressure on plans for network capabilities, unless important business needs are being addressed.

The relative importance of business needs, today, is often involved with the priorities of end users, and these priorities are an issue for buyers of processing services.

- A retail distributor reported that processing of accounts payable had been moved in-house, not to save money, but to provide information that would allow end users to implement merchandising plans.

- One respondent noted that the needs of end users had led his firm to seek more information on credit card purchasers from a processing service firm.

A number of buyers believe that processing vendors can help to reduce business risks by making sure that health care related work, credit card processing, payroll or other work will be done in accordance with requirements of the federal government, states and/or other organizations or companies that are involved.

A business risk that many buyers report that they are more apt to recognize at this time is the possibility of a disaster that would have an impact on information services required to serve business operations. Disaster recovery and back-up services are being considered in more industries and for a wider range of applications and equipment platforms.

2. Major Issues of Processing Services Vendors

A consideration of vendors that remains of high interest is how to penetrate accounts, as indicated in Exhibit V-2.

EXHIBIT V-2

Processing Services
Major Vendor Issues

- Strategies/tactics for account penetration
- Timing the addition of capabilities/features
- Developing, adjusting network plans
- Adding market share/volume through acquisition
- Orienting service more toward end user needs
- Utilizing other modes of service—systems operations, professional services and turnkey systems

In order of average importance to respondents.

- According to vendors, some bank processors and other processing services firms (including a firm that handles check guarantee cards) have become more aggressive in advertising by attempting to prove that they offer the lowest cost processing available. This technique has led to increases in processing volume for the vendors involved.

- Vendors are increasing the intensity of sales campaigns to broaden contacts at prospects and clients in a search for processing opportunities just to keep volumes at their current level.

Even after a business has begun to use a processing service, vendors report that they can find it difficult to expand services or interest the client in additional applications.

- Vendors note that they often must offer new features and capabilities and expanding networks in order to capture more business or expand services at clients. In many instances the added features are not customer driven and a new sales cycle occurs before the investment is recovered.

- One bank processor reports that a major issue of vendors is timing the addition or expansion of capabilities and networks in order to obtain and grow customers and keep revenues ahead of costs.

A more common means of adding revenues and market share is through acquisition, although vendors differ as to what type of company or workload should be acquired.

- Several respondents, including a bank processor, felt that acquisitions should seek to fill out product lines rather than expand geographic coverage.

- Other vendors feel that products should stay within narrow ranges unless there is a need to expand beyond a saturated sector of a market. Some payroll processors have concentrated more on adding volume and geographic coverage, but even they have expanded product features as a result of acquisitions.

As Exhibit V-2 notes, vendors of processing services have become more aware of and sensitive to end-user plans.

- A bank processor recalled that new trust processing features, EFT capabilities and customer information file capabilities were added to other services to meet the needs of several end users at client banks.

- Vendors have been adding supplementary operational services as well as features to applications software products to meet the needs of end users. This process has resulted in a movement from processing services toward systems operations in some cases.

The use of other modes of information services, particularly systems operations, is a key issue for processing services vendors. If clients become committed to plans to move an application system in-house or to use systems operations services in a department where a processing services vendor provides services, the processing services vendor must be prepared to address the opportunity or lose the business.

- Some vendors have developed professional services and turnkey capabilities to help users modify processing work and to move it in-house when that becomes desirable.

- Many of the larger vendors of processing services established a system operations type of service (facility management) before INPUT had separated this service from professional and processing services. Now that the service is recognized as an area of opportunity, other vendors are considering use of this mode to take advantage of its faster growth rate and profit potential.

3. Major Trends in Processing Services

The major trends in the processing services industry shown in Exhibit V-3 indicate that processing services offer a continuing opportunity for vendors even if the growth rate of this mode has dropped slightly.

EXHIBIT V-3

Processing Services
Major Trends

- Expansion of vendor services into systems operations
- Continuing use of vendor processing services
- Emergence and consolidation of vendors
- Further development/specialization of services
- Pricing creativity
- Expansion of disaster recovery services to new platforms

In order of average importance to respondents.

- Processing services vendors find that they have the opportunity to participate in the growth of outsourcing and sale of systems operations services. They have current business and/or contacts with organizations that are prospects for outsourcing as well as the operations and professional services capabilities.

- A number of vendors of processing services, such as First Financial Management, Litton, and CSC have concluded systems operations contracts for handling all the processing of an organization or department for periods longer than a year. (Processing services involve shorter term contracts for application-specific services, typically paid for on a usage basis.)

- The standard types of processing services, which generally involve functions such as payroll, plastic card-based processing, forms, and claim (including tax) processing—and occasionally part of back-office functions—will continue to be used due to the unwillingness of many users to move this work in-house.

As noted in Exhibit V-3, there is a trend for vendors to constantly emerge in the processing services market and take care of a new function or offer a service in a new way that might involve, for example, processing health industry claim forms or back-office functions for a financial industry service. Many of the firms that emerge are acquired or merge with other processors within a short time in order to take advantage of economies of scale or gain the use of better technological capabilities.

- A hospital reported that accountants who had done contract work for them had set up a service to process their health care forms during the past few years. The service firm had started to negotiate joint operations or a possible merger with a larger processing firm within the last year.

- Several small firms that had started to handle back-office processing for brokerage firms in their region thought that it would be beneficial to merge or be acquired in order to reduce costs and gain backup operational support.

- A payroll firm that said it had initiated service to provide more informative reports to clients was acquired by an experienced payroll processor within a few years of beginning operations.

A long-term trend that encourages entrepreneurs to set up a new processing service or vendors to expand their services is the constant need for new capabilities or specialization in processing for certain industry markets. The specialization may be required due to new financial industry instruments, changing government or industry reporting requirements, or interest in additional information on processed records, such as more detail on purchases involving credit cards.

- The interests of end users have been a factor in recent requests that have encouraged bank processors and vendors of payroll, tax processing and other services to add new reports and on-line query features.

- Due to the present economic situation, some buyers seeking additional specialization or new services report that they are attempting to improve productivity by gaining these services at little or no increase in price. As noted in Exhibit V-3, this has led to more creativity in pricing by vendors to encourage additional work but find means of obtaining additional revenue.

Exhibit V-3 also points out that there is a major trend to expand disaster recovery services to new vendor platforms. In addition to IBM mainframes, these services are now available on other vendor equipment, including DEC and Unisys, and has been announced for midrange equipment, particularly AS/400 systems. The growing importance of this service will lead to its expansion on other platforms.

4. Driving Forces in the Processing Services Market

As indicated in Exhibit V-4, a driving force in the processing services market is users' reliance on processing services. Users report that they are willing to rely on the ability of vendors to meet critical schedules, provide accurate and high-quality work, and meet internal and external requirements.

EXHIBIT V-4

Processing Services Market Driving Forces

- Reliance on processing services
- The role of end users
- Rising importance of industry/application knowledge
- Importance of network capabilities
- Need for rapid changes to "services" applications
- Increased dependence of business on information technology

In order of average importance to respondents.

The willingness to rely on processing vendors has been a force that has led to the use of vendors for outsourcing as well as standard processing work.

The expanding role of end users is also a factor in the use of processing services at this time.

- End users are willing to let processing services be used or to outsource work if it can help to meet organization objectives for more productivity.
- End users are increasingly neutral about where IS capabilities are located, as long as their own needs can be met by local PCs or workstations and client/server application products, and customer needs are well served.

A department manager of a manufacturer commented that end users who are involved in using IS to plan, manage and run business activities do not feel that it is necessary to have large IS capabilities in-house if needs can be met economically and efficiently elsewhere. He felt that this makes users more supportive of the use of processing services and outsourcing.

Another driving force in the use of processing services, in which end users are interested, is the importance of industry/application knowledge.

- Vendors such as FIserv, First Financial Management, and EDS know banking application systems so well that prospects would find it difficult to reject the use of their capabilities on the basis of insufficient knowledge.

- ADP possesses in-depth knowledge of certain brokerage industry and cross-industry applications such as payroll, which can be used to expand work or penetrate accounts.

The growing recognition of vendors' knowledge of the industries they serve and applications within those industries has also helped drive the use of systems operations within corporations.

Another force driving more organizations to consider the use of processing services is the importance of network capabilities in business activities.

- Organizations report that they must be prepared to meet demands to increase network capabilities supporting application systems, to meet customer or remote office needs, within a short period of time. Processing services have been able to help address these needs in some cases.

- The ability of vendors to react more rapidly than most users to emergencies or changing network needs is a factor that can promote use of processing services or systems operations.

As Exhibit V-4 indicates, the need for rapid changes to the application systems handled by processing vendors to meet new mandatory requirements of governments, industry groups or other bodies also drives the use of processing services.

- Processing groups are more used to making changes, since they serve a number of clients and are always scheduling sets of changes.

- Larger vendors are also constantly performing trade-offs between the use of existing capabilities and upgraded equipment, systems software and networks, when changes in application products are considered. It is difficult for users to accommodate the same level of planning.

The greatly increased dependence on the use of information technology that is taking place in industry and government has been a driving force that affects several modes of processing services.

- Companies using payroll, credit card and other processing services report that a leading benefit of processing is having a vendor worry about and guard against interruptions and loss of data in these operations.

- Banking organizations that use a processing service or systems operations report that one of the benefits is continuous operation.

The increasing dependence of business and government on the use of IS has also been a driving force in the use of another service of vendors in the processing market—disaster recovery and backup. The redundant capabilities and planning that vendors must have to meet the needs of multiple clients with critical application systems makes it possible for them to provide meaningful backup and recovery for the increasingly complex application systems of users.

5. Inhibitors to Growth in the Processing Services Market

As indicated in Exhibit V-5, the delayed economic recovery and tight budgets have been the chief inhibitors to the expansion of processing services. Growth has continued in the market due to the increasing reliance on processing services for some business functions, but has not been as high as previously forecast.

EXHIBIT V-5

Processing Services Inhibiting Forces

- Delayed economic recovery
- Tight budgets
- Competition from other information services modes
- Limited planning
- Short supply of technical skills
- Use of shared resources

In order of average importance to respondents.

Competition from other information services modes—particularly from systems operations and application products for workstations—has also been an inhibiting factor.

- A certain amount of the processing work, such as work handled for banks, utilities, manufacturers and other industry markets can expand into systems operations jobs in view of corporate needs to reduce in-house functions and costs.

- A number of application systems run on processing services to meet engineering and scientific, planning, or other needs can be downsized and run on workstations more economically and sufficiently well to meet user needs.

- Some vendors of professional services who have experienced high levels of competition in their niches of the professional services market have sought out opportunities such as moving work in-house for application systems that they are familiar with.

- Turnkey vendors have sought out opportunities to move work in-house as well. Some vendors of processing services have used this delivery mode to help clients move processing jobs in-house if clients become committed to carrying out such a move.

Several turnkey vendors have provided processing services on their turnkey systems for a period of time until the client was ready to move the equipment in-house.

Limitation of vendor capabilities and planning has also been an inhibiting factor.

- Several processing vendors noted that they have not been ready with network capabilities, applications software products, equipment, or planning that was needed to meet recent business opportunities in core business applications. One vendor felt that large systems integration and professional services vendors might be better prepared for those opportunities.

- Some vendors of processing services, such as First Financial Management and EDS, became prepared to take advantage of expanded processing or systems operations (outsourcing) opportunities before the surge of interest in these services.

The need for technical skills that are in short supply to meet network, data base integration, complex application system and other needs can also be an inhibiting factor, as noted in Exhibit V-5.

In addition, the use of shared resources could limit vendor opportunities. Some users may find that they can obtain the benefits of economies of scale in processing through the use of shared resources. Recent mergers and acquisitions have shown that consolidation of IS resources and personnel provides the opportunity for savings and more effective planning. However, these users may not be able to achieve the same levels of savings or provide as much security from risks as a vendor could.

Market Forecast

A
Processing Services Overview

1. Growth Perspective

The use of what could be called processing services began when several computer manufacturers sold contracts to run jobs on computers at their offices in the late 1950s. As a delivery mode for information services, processing services became prominent in the 1970s when it became the largest mode, accounting for over 67% of information services expenditures in 1979. At that time, its compound annual growth rate (CAGR) was over 16%.

Growth rates dipped in the last two years due to the maturity of this delivery mode, the downturn and continuing problems in the economy and the separation of what is now called systems operations processing into a separate delivery mode where it was aggregated with the facility management services that had been included in professional services.

The factors noted above led to a decrease in the growth of processing services from 12% in 1988 to 9% in 1989 and 8% in 1990, and to a projected compound annual growth rate of 8% through 1996. This growth rate is still much better than the growth of the U.S. economy as a whole, and processing services remains a healthy market that has good revenue and profit potential. Some vendors also use processing services as a platform for launching outsourcing services.

The change in outlook for processing services from last year's report to this year's report is shown in Exhibit VI-1.

EXHIBIT VI-1

Processing Services Market Overview ($ Billions)

1990 Outlook		1991 Outlook
1990 Forecast - 17	versus	1990 Actual - 17
1991 Forecast - 18.4	versus	1991 Forecast - 18.3
1990-1995 Forecast Growth Rate - 9% (CAGR)	versus	1991-1996 Forecast Growth Rate - 8% (CAGR)

- The forecast for user expenditures in 1990 of $17 billion was about equal to the actual expenditures in 1990. The reconciliation of expenditures in Appendix B shows that they differed by only $5 million.

- INPUT has adjusted the forecast made in 1990 for user expenditures in 1991 downward, however, from $18.4 billion to $18.3 billion and has also developed a five-year forecast of 8% that is 1% lower than the previous forecast.

The downward revisions in forecasts shown in Exhibit VI-1 are due mostly to the protracted economic downturn and delayed recovery, but rapidly increasing interest in systems operations and in downsizing application products running on processing services so that they will run on workstations will also contribute to a decrease in planned expenditures for processing services.

2. Market Definitions

Until last year, INPUT included systems operations as a submode of processing services, along with transaction, "other," and utility processing. However, user trends toward the use of vendor services to handle the core applications of an entire company or department on a long-term basis established a new type of service that INPUT has defined as a separate delivery mode.

- This mode of service is often described as outsourcing and is associated with benefits such as the improvement of service capabilities, reduction of operating costs and risks in the use of information systems, and adjustment to the limited availability of key skills.

- The size and significance of the systems operations market has increased, and INPUT now offers analysis of this market in a separate report, *U. S. Systems Operations Market, 1991-1996*.

As a result of the separation of systems operations services from the processing services market, the INPUT data base has been adjusted to reflect only transaction, utility, and "other" processing services expenditures. These market sectors are defined below.

a. Transaction Processing Market Sector

The transaction processing sector is characterized by the movement or offloading of the processing for an application or application set to a vendor's equipment and network capabilities. This processing, which requires the entry of transactions, can be of a critical business nature but it does not involve a long-term contract (greater than a year) for all the processing of a corporation or department.

User organizations are willing to have important application systems handled by vendors since there is a historical record of cost-effective, timely and high-quality performance by vendors.

The submode of transaction processing services is the chief form of processing services delivery, and vendors such as ADP, EDS, American Express Information Services Company, First Financial Management, Mellon Bank, Shared Medical Systems, General Electric Information Services, and National Data Corporation derive a meaningful amount of revenue from transaction processing

b. Utility Processing Market Sector

When in-house personnel make use of the computing power and tools of vendors to develop and/or tailor applications or solutions specific to their unique requirements, they are using the utility processing submode of processing services.

- Although many applications that were developed and run in this submode have been moved in-house to workstations, utility processing is still used in very large government, engineering, and manufacturing environments to handle complex jobs.

- The utility processing vendor provides access to a powerful set of computer and software products through a communications network, and provides consulting support to enable users to develop and run specific applications.

- Software tools provided by vendors usually include compilers, DBMSs, 4GLs, sorts, terminal hardware support, scientific and statistical libraries, graphics capabilities, financial modeling systems, and other application development tools.

The ability to make use of specialized software products, including mathematical and statistical routines and libraries that are not available in-house due to limited need, is another reason for using a processing vendor.

Utility processing is usually considered where the processing, storage, or memory capacity of local installations or workstations is too limited for a particular customer need.

- This particularly applies if the need is periodic, its intensity is difficult to predict, or if it requires special skills.

- In addition, the need for special peripherals such as laser printers, scanners, or large-scale plotters could lead to the use of utility processing.

The vendors providing supercomputer processing services exemplify the utility processing market.

- Although users are acquiring super and superminicomputers in increasing numbers, the market for supercomputer processing services will continue as long as customers require the sheer size and power of a Cray or similar system for certain types of problems.

- Small repetitive technical applications may shift to the minisupercomputers, just as small timesharing applications shifted to personal computers in the past.

Organizations tend to use utility services on a short-term or project basis.

- Software product companies, for example, might buy time from vendors to develop and test their products.

- Other companies, converting from one system to another, might buy resources during the change to avoid unnecessary and costly in-house duplication of processing resources.

Utility processing can also be used to handle overload conditions on in-house systems.

Utility processing can provide interim support for government organizations while budget approval or procurement processes for in-house systems are in process. This approach can be highly beneficial for initiating important work, since bureaucratic acquisition processes could result in lengthy delays.

Utility processing can also provide a means of trying out new software products before integrating them into the in-house software portfolio. IBM offers this facility to customers through its Information Network Service.

Usually, the trade-off between using an in-house system and a utility processing service is efficiency of use, not only of software products, but of the support expertise necessary to effectively use them.

c. "Other" Processing Services

The third submode, "other" processing services, includes disaster recovery and backup services in addition to services involving the input and output of data such as remote data entry, pick-up of input material and delivery of output, scanning, computer output on microfilm and laser printing.

The disaster recovery and backup market is now growing rapidly due to increasing dependence on the use of IS, problems that have interrupted IS operations at both Fortune 500 and smaller corporations, and by major external problems such as recent power outages in major cities and the earthquake in San Francisco.

- These experiences have made it clear that all organizations—especially those with mission-critical systems—are highly vulnerable if they do not have disaster recovery services in place.

- A recent survey of users of midrange systems showed that almost 25% were concerned about disaster recovery.

Comdisco and SunGard Data Systems, which have achieved strong positions in the disaster recovery market, have been joined by IBM, DEC, Intelogic Trace, XL/Datacomp and other vendors of equipment and maintenance services.

Computer output on microfilm (COM) remains an active service even though the storage of information on CD/ROM is receiving increasing attention and many companies use on-line storage of data to serve retrieval purposes.

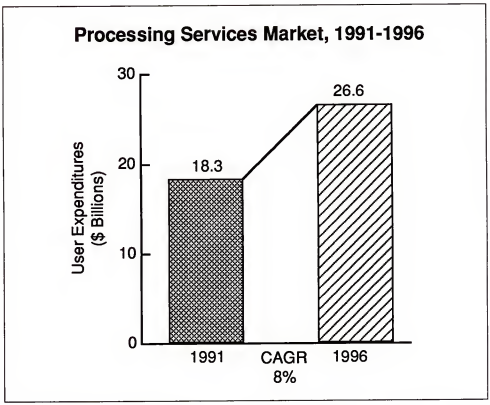
- COM is less expensive, particularly for the readers involved, and many COM services are in operation and expanding to meet the needs of banks and other companies.

- Companies known for this service include First Financial Management and Zytron, a subsidiary of Dun & Bradstreet.

3. Processing Services Forecast

Based on its ongoing surveys of user expenditures, INPUT estimates that the processing services market will grow from a 1990 level of $17 billion in expenditures, at a 7% rate, to $18.3 billion in 1991, and projects that it will grow at a compound annual rate of 8% to $26.6 billion in 1996, as shown in Exhibit VI-2.

EXHIBIT VI-2



- Each of these growth rates is 1% lower than rates forecast in 1990.
- Estimated growth in 1991 is 1% lower than growth projections in 1990 due to the maturity of the processing services market and the movement of jobs to other information services modes as well as to the protracted economic downturn.
- The duration and intensity of the economic downturn and the slow recovery and growth of GNP through the middle of the decade is also a factor producing the drop of 1% in the five-year forecast.

Another factor that was considered in lowering the five-year forecast was the rising level of interest in outsourcing and the impact it would have on processing services in certain vertical markets.

Since it is necessary to consider the GNP and growth rate deflators in comparing growth rates, INPUT's assumptions regarding these factors are shown in Exhibit VI-3.

EXHIBIT VI-3

U.S. GNP and Inflation Growth Assumptions 1990-1996

1990 Report Assumptions*

Overall Economy	1990E	1991E	1992E	1993E	1994E	1995E	1996E
Nominal GNP	5.4	5.4	6.7	6.7	6.7	6.5	6.4
GNP Deflator	4.4	4.6	4.1	4.0	4.0	3.9	3.8
Real GNP	1.0	0.8	2.6	2.7	2.7	2.5	2.6

1991 Report Assumptions**

Overall Economy	1990A	1991E	1992E	1993E	1994E	1995E	1996E
Nominal GNP	5.0	3.8	6.3	6.7	6.5	6.0	6.2
GNP Deflator	4.1	3.9	3.6	3.9	3.9	3.8	3.7
Real GNP	0.9	(0.1)	2.7	2.8	2.6	2.2	2.5

Source: CONSENSUS™ forecast, Blue Chip Economic Indicators

* Blue Chip Economic Indicators - Vol. 15, No. 10, October 10, 1990

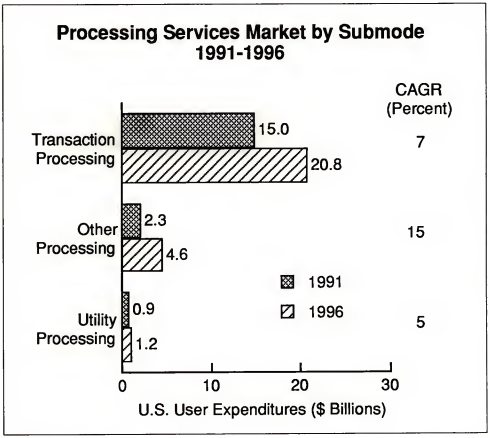
** Blue Chip Economic Indicators - 1991-1992 from Vol. 16, No. 7, July 10, 1990
- 1993-1996 from Vol. 16, No. 3, March 10, 1990

All processing services delivery submodes will experience market growth during the forecast period, as shown in Exhibit VI-4. "Other" processing services, driven by interest in disaster recovery, will grow most rapidly at a compound rate of15%, which will double expenditures for this submode from $2.3 billion in 1991 to $4.6 billion in 1996.

Utility processing, which will grow at a compound annual growth rate of 5% or one-third of the rate for "other" processing services, will increase in volume from $0.9 billion to $1.2 billion between 1991 and 1996.

The major submode of processing services, transaction processing, will grow at a compound annual growth rate of 7% to increase from $15.0 billion in 1991 to $20.9 billion in 1996.

EXHIBIT VI-4



Except for "other" processing services, which is driven by the growth of disaster recovery, the market growth in submodes is modest. However, the processing services submodes all provide a steady increase in user expenditures for vendors, in addition to opportunities for marketing other services, particularly systems operations, in some industry markets.

4. Vendor Overview

There are many vendors active in the processing services market, ranging from very small firms to large firms with revenues over $500 million. These vendors also have significant differences in corporate organization, application focus and markets, as illustrated by Exhibit VI-5.

The leading vendors of processing services shown in this exhibit include subsidiaries of an airline, travel and card service firm and a manufacturer, as well as firms dedicated principally to processing services. Further details and an expanded vendor list and evaluation are contained in Chapter VII, Competition, together with a group of vendor profiles.

EXHIBIT VI-5

Leading Processing Services Vendors U.S. Revenue, 1990

Rank	Vendor	Estimated Processing Services Revenue ($ Millions)	Major Markets
1	ADP	1,237	Human Resources Banking and Finance
2	First Financial Mgmt. (FFM)	739	Banking and Finance Health
3	American Express ISC	725	Banking and Finance Health
4	Control Data	307	Split among many markets including Banking and Finance and Human Resources
5	Covia	239	Transportation
6	NDC	210	Banking and Finance Retail
7	Comdata	188	Transportation
8	CCH Computax	185	Accounting
9	Equifax (and Telecredit)	182	Banking and Finance, Insurance, Retail Distribution
10	EDS	180	Banking and Finance, Government, Telecommunications, Insurance, Retail

Seven of the ten largest vendors shown in Exhibit VI-5 offer processing services to the banking and finance industry, which is the largest market for processing services among the 15 vertical markets tracked by INPUT.

B

Forces Impacting the Processing Services Market

As discussed in chapter V, the three chief forces having an impact on the processing services market are the tendency of companies to rely on processing services for certain types of business functions, the expanding role of end users, and economic pressure resulting from the protracted downturn. These forces and their impact over the planning period are summarized in Exhibit VI-6.

EXHIBIT VI-6

Forces Impacting the Processing Services Market

- Force
  - Reliance on processing services
  - Protracted economic problems
  - End-user pressures
- Impact
  - Use of processing services vendor where possible
  - Consideration of systems operations and downsizing
  - Change, if it will support end-user goals

The first type of force driving the use of processing is illustrated by the reliance of many firms on vendors who handle payroll, plastic card and tax processing, and other high-volume, common application systems.

- This force will help processing services vendors hold on to a certain volume of business, where IS technology and end-user interests do not make another alternative considerably more attractive.

- Where other alternatives such as systems operations or downsizing application systems to run on workstations rather than on processing services provide a noteable advantage in economy or in the service of end-user interests, processing services vendors may find it possible to offer that alternative. Bank processors such as First Financial Management and EDS have found it possible to sell systems operations as well as processing services.

The expanding role of end users has encouraged the use of systems operations and downsized applications where those activities will support business goals or lower departmental costs.

End users are also supportive of the use of processing services where the industry/application knowledge of the processor or network and other capabilities of the processor would be costly to obtain in-house. In general, end users are not proponents of building in-house IS capabilities.

Due to the current economic pressure and the willingness of end users and management to consider large-scale changes in the use of IS, this is a period of opportunity.

- Processing vendors can use the increased functionality of new equipment, software and network capabilities with their past experience and knowledge to increase work in certain industry markets.

- Vendors may have to expand into other modes of service delivery, particularly systems operations, to take advantage of opportunities.

Economic pressures, however, can also cause firms to put aside or delay plans that would have resulted in the implementation of new processing applications. Many businesses have adopted a cautious approach to activities that will require even a limited investment in training or the commitment to use a service over a limited period of time.

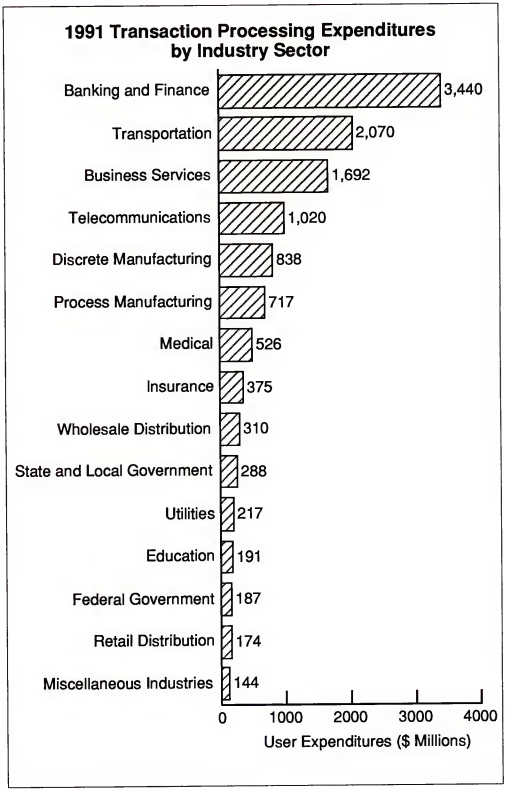
C
Submode Market Forecasts

1. Transaction Processing Services Market

The transaction processing market is divided into industry-specific and cross-industry sectors. These are examined separately.

The distribution of the $12.2 billion in user expenditures forecast for industry-specific transaction processing in 1991 is shown in Exhibit VI-7 across 15 industry sectors. Expenditures in the banking and finance sector, $3.4 billion, are over 66% larger than those in the next largest sector, transportation, which is dominated by the expenditures tied to reservation systems.

EXHIBIT VI-7



- Consumer services was dropped as an industry sector during 1991 and expenditures for this market were distributed to the transportation and business services sectors.

At the end of the period between 1991 and 1996, banking and finance will remain the largest industry sector, still accounting for about 29% of the expenditures in transaction processing. Part of the growth that would have gone into this mode will be diverted into systems operations.

During the period from 1991 to 1996, expenditures for the telecommunications market will grow more rapidly than in the rest of the industry markets, moving telecommunications into third place behind transportation and banking and finance in user expenditures in 1996.

If all the user expenditures forecast for each industry market are added together for the period from 1991 to 1996, as shown in Exhibit VI-8, the expenditures in the banking and finance market can be seen to be almost as large as the those of the next two markets combined. The dominance of opportunities in banking and finance explains why a large percentage of leading vendors serve this market, as shown in Exhibit VI-5.

User expenditures for transaction processing in the cross-industry markets in 1991 are shown in Exhibit VI-9. These market sectors are those that meet the needs of any industry, such as payroll processing, scientific computing services, office systems and education and training.

- Human resources is the largest of these markets, as a result of payroll processing, accounting for over half of user cross-industry expenditures in 1991.

- Human resources will rise to almost two-thirds of cross-industry expenditures in 1996, as some other cross-industry application systems are either customized for particular industries so that expenditures for them are moved to industry markets, or they are moved in-house.

EXHIBIT VI-8

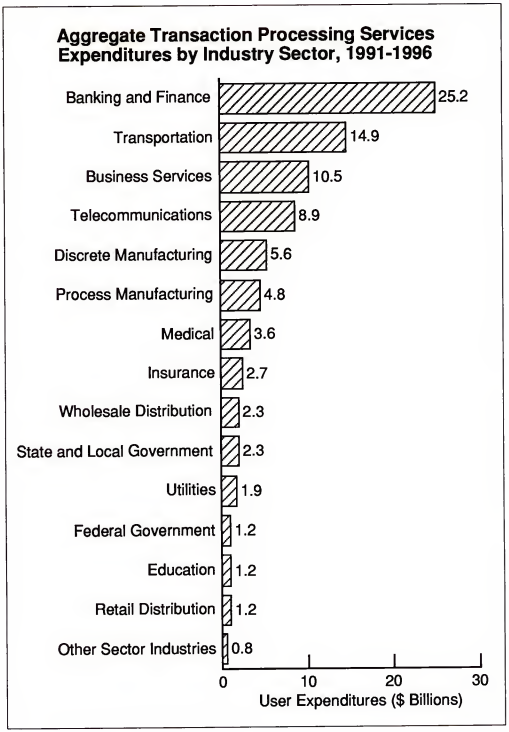
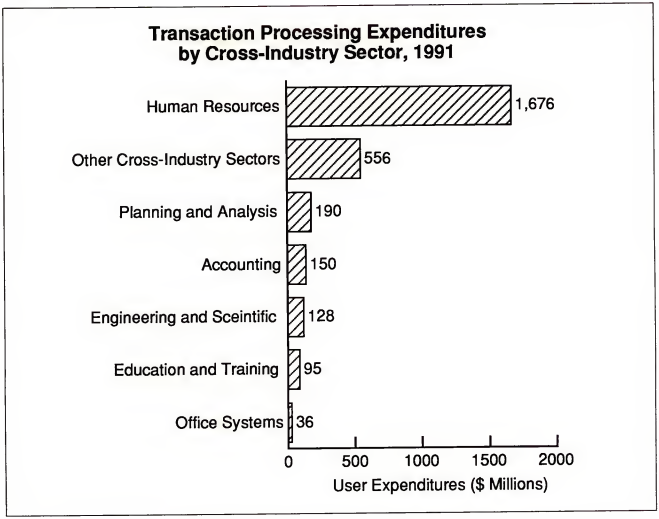


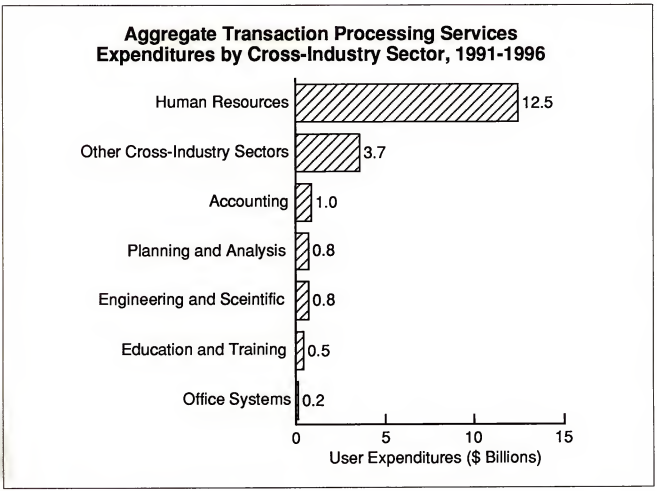
EXHIBIT VI-9



Aggregate expenditures for cross-industry transaction processing from 1991 through 1996 are shown in Exhibit VI-10.

- In common with the industry markets, one cross-industry transaction processing market—human resources—is dominant.
- However, human resources, particularly payroll and associated activities, is much more dominant among cross-industry markets than banking and finance is among industry markets. It accounts for more expenditures than all other cross-industry markets combined (about 64%) in the period from 1991 to 1996, as shown in Exhibit VI-10.

EXHIBIT VI-10



Growth rates for transaction processing services in industry and cross-industry markets are shown in Exhibits VI-11 and VI-12.

- Of the 15 industry and seven cross-industry market growth rates, only seven are above 7%, and four are negative. About two-thirds of the rates decreased from the previous year.

- Growth in transaction processing is led by activity in a limited number of markets, including telecommunications, utilities, and state and local government.

Growth is occurring in a much greater number of markets for systems operations and network services

Among the industry markets shown in Exhibit VI-11, the highest growth rates occur for telecommunications at15% and utilities at 14%. The former market is driven by expanding use of telecommunications products and services and the latter market is driven by GIS applications.

EXHIBIT VI-11

Transaction Processing Industry Sector Growth Rates, 1991-1996

Industry Sector	Revenues ($ Millions)		CAGR (Percent)
	1991	1996	
Telecommunications	1,020	2,052	15
Utilities	217	421	14
State and Local Gov't.	288	507	12
Transportation	2,070	2,980	8
Wholesale Distribution	310	452	8
Banking and Finance	3,440	4,988	8
Insurance	375	530	7
Retail Distribution	174	243	7
Discrete Manufacturing	838	1,038	5
Process Manufacturing	717	895	5
Medical	526	660	5
Federal Government	187	220	3
Education	191	218	3
Business Services	1,692	1,824	2
Miscellaneous Industries	144	131	-2

Exhibit VI-12 examines the seven cross-industry markets for transaction processing services. Human resources, driven strongly by payroll services, has the highest growth rate, a CAGR of 8%, as well as being the largest market in both 1991 and 1996.

The markets for education and training, office systems and planning and analysis are shrinking as more applications systems are moved in-house.

EXHIBIT VI-12

Transaction Processing Cross-Industry Sector Growth Rates, 1991-1996

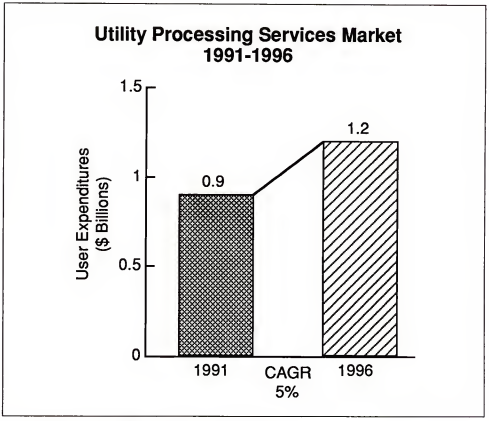
Industry Sector	Revenues ($ Millions)		CAGR (Percent)
	1991	1996	
Human Resources	1,676	2,460	8
Other Cross-Industry	556	676	4
Engineering and Scientific	128	131	1
Accounting	150	175	3
Education and Training	95	68	-6
Office Systems	36	26	-6
Planning and Analysis	190	100	-12

2. Utility Processing Services Market

Utility processing, which is neither industry- nor cross-industry-oriented, is still being used by large businesses and the government when certain unique resources are required to run or test applications, or it is more desirable or economic to utilize resources from a vendor than provide them internally.

As illustrated in Exhibit VI-13, 1991 expenditures for utility processing services were $0.9 billion, and INPUT forecasts that these expenditures will grow at a compound annual growth rate of 5% to $1.2 billion in 1996. Since the growth rate has been declining over time and investment in resources is required for utility processing, this service is most feasible as a supplementary service of a vendor offering other processing services.

EXHIBIT VI-13

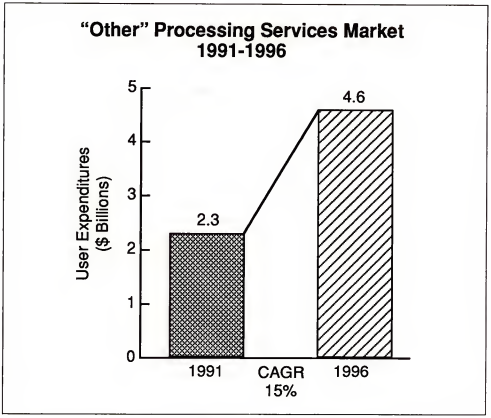


3. "Other" Processing Services Market

The market for "other" services is growing at a dynamic compound annual growth rate of 15% in user expenditures, driven by the increasing recognition of the need for disaster recovery services, as shown in Exhibit VI-14. This growth rate is three times larger than the growth rate for the utility processing services market.

The market for disaster recovery services is estimated to be currently about 20% of the "other" processing services market. It has been dominated by three large vendors—Comdisco, IBM and SunGard—but many other vendors are now entering or exploring the market. It may take time for some new vendors to gain meaningful market share due to the investment required, but the equipment and maintenance services firms are becoming more interested in this service, since it offers an opportunity.

EXHIBIT VI-14



The "other" market also includes a group of operational services which should be mentioned. The pick-up and delivery of work, remote data entry, and special output services have provided opportunities for processing vendors to obtain additional revenue.

Some of the other services—computer output on microfilm (COM), laser printing, and remote data entry—have been sold separately as well as with transaction processing services.

COM has been an important source of revenue for some firms in the processing services market, such as Anacomp and Endata (now part of First Financial Management). The use of CD ROM and on-line storage has begun to take some business from COM, but expanded use by current users and the low cost of COM, particularly COM readers, should encourage continued use.

Competition

A
Introduction

Vendors who are among the leaders in revenues in the processing services market are identified and discussed in this chapter. Specific services offered by these vendors can include:

- Transaction processing
- Utility processing
- Other processing

If the client has all processing or all the processing of a department performed by a vendor on a contractual basis for a period longer than a year, the processing work is classified as systems operations.

- This type of information services work is analyzed by INPUT in a separate report, *U.S. Systems Operations Market, 1991-1996*.

- The systems operations work of processing services vendors is discussed in this report to some extent, however, since a number of vendors have systems operations work related to their processing services.

The information systems equipment used for processing or systems operations services may be owned by the vendor, the client, or a third party. As part of a systems operations arrangement, the equipment may be bought from a client by a vendor.

B
Market Leaders

Leading vendors in the processing services market are listed in Exhibit VII-1. These vendors tend to fall into one of two groups.

EXHIBIT VII-1

Leading Processing Services Vendors U.S. Revenue, 1990

Rank	Vendor	Estimated Processing Services Revenue Share ($ Millions)	Market Share (Percent)
1	ADP	1,237	7
2	First Financial Management (FFM)	739	4
3	American Express ISC	725	4
4	Control Data	307	2
5	Covia	239	1
6	NDC	210	1
7	Comdata	188	1
8	CCH Computax	185	1
9	Equifax (includes Telecredit)	182	1
10	EDS	180	1
11	GTech	177	1
12	Fiserv	169	<1
13	GEIS	165	<1
14	NCR	150	<1
15	Shared Medical	137	<1
16	SunGard	134	<1
17	Comdisco DRS	130	<1
18	Paychex	128	<1
19	Anacomp	114	<1
20	IBM	100	<1

- One group focuses heavily on one or occasionally two specific industry or cross-industry markets and includes vendors such as Paychex, First Financial Management and Shared Medical.

- The second group focuses on work in a group of market sectors and includes vendors such as GEIS and CDC.

Some vendors that have been devoted primarily to one or two markets have expanded through internal development or acquisitions into other industries.

- ADP has been identified principally with payroll processing (human resources), but it also has substantial business with brokerages, distributors, and firms in the business services industries.

- American Express was known in the processing services industry for its subsidiary, First Data Resources, which was active primarily in credit card-related processing. However, FDR has expanded into new industries, and American Express has acquired vendors serving the health industry sector that have been grouped together with FDR in the American Express Information Services Company.

Although a number of processing services vendors have extended their services into additional markets, about 40% of the large vendors listed in Exhibit VII-1 have continued to serve or devote a large percentage of their service to a single market.

The market that has received most vendor attention among industry and cross-industry markets is banking and finance, as illustrated in Exhibit VII-2.

- The second most popular market is human resources.

- Other major markets include health care and transportation.

EXHIBIT VII-2

Major Markets of Selected Leading Processing Services Vendors

Vendor	Major Markets
ADP	Cross-industry human resources Banking and finance
American Express ISC	Banking and finance, health
Anacomp	Computer output microfilm
CCH Computax	Cross-industry accounting
Comdata	Transportation
Control Data	Various markets, including banking and finance and cross-industry human resources
Covia	Transportation
FFM	Banking and finance, health
FIserv	Banking and finance
GTech	State and local government
GEIS	Banking and finance, telecommunications, manufacturing, distribution
NDC	Banking and finance, retail, health
Shared Medical	Health care services
SunGard	Disaster recovery services

The top five vendors listed in Exhibit VII-1 account for over a quarter of the revenues for processing services, and the next seven account for about 7%. The size of vendors drops off rapidly after that, although there are a number of smaller vendors with a limited amount of processing work that they handle for accountants, local stores, and small enterprises.

- The processing services sector includes hundreds of small vendors (under $30 million in annual revenues). These companies tend to be local or regional and focus on a limitied number of clients. They do contribute to new offerings within the industry.

- As these vendors begin to specialize in a specific application area and grow towards $50 million in revenue, they become logical acquisition candidates for the leading vendors. Over the past few years these acquisitions have become almost commonplace within processing services.

- This acquisition pattern is not as common in the other services areas (professional and network or software products).

When systems operations was separated from processing services due to the differences between these two service modes, the processing services revenue of many vendors was reduced.

- These adjustments changed the rankings of leading processing services vendors.

- Some leading vendors such as EDS were lowered in ranking on the list of vendors shown in Exhibit VII-1, since a large portion of their revenues resulted from systems operations business.

In order to gain an appreciation of the aggregate amount of systems operations and processing services work that is performed by vendors, Exhibit VII-3 was prepared. Vendors in this exhibit are ordered by total revenue.

- Although the two vendors who had the greatest volume of systems operations work also had a sizable volume of processing work, it is obvious that the volume of systems operations work has no relation to the volume of processing work by vendor.

- The two vendors with the largest amounts of professional services work, EDS and CSC, also had large amounts of systems operations and processing services revenues, but other vendors with little or no professional services work also had meaningful systems operations revenues.

EXHIBIT VII-3

Systems Operations Revenues of Selected Processing Services Vendors, 1990

Vendor	Processing Services Revenue ($ Millions)	Systems Operations Revenue ($ Millions)	Total
ADP	1,237	3	1,240
EDS	180	1,004	1,184
FFM	739	100	839
American Express ISC	725	-	725
CSC	30	460	490
Control Data	307	9	316
IBM	100	170	270
Shared Medical	137	128	265
GEIS	165	20	185
Systematics	-	185	185

The lack of relationship between revenues from systems operations services and processing services may be due to the fact that systems operations is early in its product cycle and many vendors of processing services have not yet explored the possibility of offering this mode of information systems.

Another delivery mode of information services that is of interest in relation to processing services is the network services mode. Firms that provide network services, such as GEIS and ADP, are likely to market related processing services.

- If electronic information (a network service) is provided by a vendor to a client terminal for the purpose of pricing a stock, the vendor can supply processing services to handle the purchase or sale of stock if a trade results.

- If a VAN or EDI is used through a vendor's network services capabilities, processing work may result from the activity.

C
Competitive Issues

The major competitive issues of processing services listed in Exhibit VII-4 are led by alternative service options.

EXHIBIT VII-4

Processing Services—Competitive Issues

- Alternative service/options
- Pricing versus functions
- SO offerings
- Aging applications
- Quality of service

- Many companies that are prospects for or users of processing services that serve industry applications are interested in the benefits of systems operations as an alternative to processing.

- Developments in workstations, networks and software products have increased the possibility for moving work in-house from a processing services vendor.

- Professional services and turnkey vendors are using new technology and the desire to save costs as arguments for selling solutions that will move processing work in-house.

Another competitive issue for vendors of processing services is the use of pricing and service features to obtain work from competitors or retain business under competitive attack.

- Competitors, particularly in the banking and financial market and cross-industry human resources sector, are constantly conducting research on competitive offerings, and they are aware that research is being conducted on their clients. The research will result in new pricing strategies and features designed to capture and retain business.

- Vendors can react to competition with price changes tailored to retain business, but they may also concentrate on features and support arrangements that will persuade customers to stay with them. Since processing services vendors have a narrow margin, they would rather counter price competition with unique features and improved services or combinations of pricing and services.

As Exhibit VII-4 indicates, another competitive issue is the age of the application products being used by the processing vendor.

- Vendors may attempt to keep the functions and capabilities of their applications ahead of competition to enjoy advantages in features and functions, or they may be responsive to clients when needed.

- Vendors may also attempt to hold costs down by keeping old software products in use and updating them only when there is a danger of losing a sizable amount of business.

Vendors can also compete through the availability of technical support and quality of service, as illustrated in Exhibit VII-4.

- The availability of knowledgable and helpful technical personnel can be a competitive advantage, since there is a shortage of people with the right combination of these skills.

- The quality of service in terms of timeliness, forms used for output, screen layouts, response to queries for service, and other factors can also differentiate the service of a vendor.

D
Segment Leaders

1. Transaction Processing Services

Transaction processing services is the largest submode of processing services, accounting for more than 82% of the revenues of vendors in the processing services market.

- Transaction processing is used by clients who are willing to offload an application or set of applications that may support critical functions such as demand deposit accounting or airline reservations to a processing vendor.

- If all the functions of a company or department of a company are offloaded for a period longer than a year, the processing would be classified as systems operations rather than transaction processing, as noted before.

As indicated in Exhibit VII-5, the leaders of the transaction processing services submode in 1990 are ADP, First Financial Management and American Express Information Services Company. Where it is difficult to separate the volume of utility and other processing services provided by firms listed in this mode, the entire processing services offering of the vendor is shown as transaction processing services in this exhibit.

EXHIBIT VII-5

Leading Transaction Processing Services Vendors, 1990

Rank	Vendor	Transaction Processing Services Revenue ($ Millions)	Market Share (Percent)
1	ADP	1,102	8
2	American Express ISC	700	5
3	FFM	625	4
4	Control Data	290	2
5	Covia	239	2
6	NDC	210	2
7	Comdata	188	1
8	CCH Computax	185	1
9	GTech	177	1

Since vendors devoted solely or principally to utility and other processing services are not encountered among the largest processing services vendors, the list of transaction processing vendors in Exhibit VII-5 contains the same vendors as those in Exhibit VII-1 for the processing services industry.

2. Utility Processing Services

Utility processing services can be obtained by vendors that offer transaction processing services, as shown in Exhibit VII-6, because they are easily accessible when a client has a need for processing speed, memory size or special peripherals that cannot be met with in-house capabilities.

EXHIBIT VII-6

Utility Processing Vendors

Rank	Vendor	Estimated 1990 Revenue ($ Millions)	Market Share (Percent)
1	ADP	60	7
2	GEIS	45	5
3	Comdisco	40	4
4	IBM	10	1
5	EDS	10	1
6	May & Speh	3	<1
7	CDC	1	<1

Utility processing services could be used when there are periodic or special problems to be solved, particularly those requiring a supercomputer, or when it is desirable to test or develop special software products that may require additional computing resources to run.

Vendors who wish to encourage the use of utility processing may provide network capabilities to access computers as well as software products including operating systems, compilers, 4GLs, DBMSs, terminal support, scientific and statistical libraries, financial modeling, decision support and application development tools of interest to users.

Some vendors, including Genix and Litton, may utilize utility processing as a service that could lead to other business. These vendors provide short-term utility processing services to run applications software products from in-house or third-party sources, which may be run on a processing services or systems operations basis after the short-term contract is over.

- If the processing involves all the processing of a company or department and is for a period longer than a year, the work would be classified as systems operation; otherwise, the work would be processing services.

- The use of utility processing as a means of testing application systems that could be outsourced could grow in usage due to the increasing interest in outsourcing.

Utility processing can also be a means of providing specialized services on a short-term basis.

- Universities and vendors can provide time on supercomputers or new parallel processing systems as a specialized service.
- The use of specialized direct marketing and other services is provided by May & Speh to its clients through utility processing services.

Utility processing services can also be supplied by vendors like Comdisco that have a variety of equipment available as a result of other computing industry business.

3. "Other" Processing Services

In addition to the rapidly growing diaster recovery and backup business, "other" processing services include remote data entry, data pick-up and delivery, scanning, computer output microfilm (COM), and laser printing.

As Exhibit VII-7 illustrates, there are vendors whose revenue is solely or mostly due to "other" services, including Anacomp, SunGard and Comdisco.

EXHIBIT VII-7

Leading Vendors of "Other" Processing Services, 1990

Rank	Vendor	Estimated 1990 Revenue ($ Millions)	Market Share (Percent)
1	SunGard	134	6
2	Comdisco Disaster Recovery Services	130	6
3	Anacomp	114	6
4	First Financial Management (FFM)	110	5
5	ADP	75	4
6	EDS	30	2
7	Merrill Lynch	27	1

- Anacomp derives its "other" processing services revenue from COM. EDS and FFM have substantial amounts of COM revenue also as a result of serving the banking market.

- SunGard and Comdisco obtain their "other" revenues from disaster recovery and backup services. SunGard serves the IBM mainframe market and has formed a relationship with a subsidiary of Bell Atlantic, Sorbus, to serve the DEC and midrange IBM market. Comdisco provides mainframe and midrange service.

IBM entered the disaster recovery and backup business in 1989 and offers backup services from its IBM Business Recovery Centers.

Third-party maintenance vendors Intelogic Trace and Bell Atlantic Business Systems Services have entered the business more recently.

Disaster recovery and backup is the fastest growing part of the "other" services market and is responsible for the CAGR of15% that "other" services enjoys.

Although the use of COM is still growing, the use of CD ROM and image processing will cut into the COM market as the cost of these approaches is lowered through new technology. The installed base of COM equipment and readers should continue to support the use of COM for the near future, however.

E
Vendor Profiles

The vendors profiled in this report are listed in Exhibit VII-8.

EXHIBIT VII-8

Processing Services Vendor Profiles

- Affiliated Computer Systems
- Anacomp
- ADP
- Comdisco
- First Financial Management
- Litton Computer Services
- Shared Medical Systems

1. Affiliated Computer Systems, Inc., 2828 North Haskell, P.O. Box 219002, Dallas, Texas 75221

a. Company Strategy

ACS plans to use its strength and experience in processing services and outsourcing in combination with strategic acquisitions to become one of the top vendors in outsourcing and processing services, with revenue in excess of $500 million by 1993.

A high level of technology, network and application products will be used to support its principal markets in banking, the federal government, and health care as well as other markets it may penetrate.

In support of its strategy, ACS plans to attract and maintain high-level personnel.

b. Company Background

ACS initiated operation in July, 1988 through the purchase of three processing services subsidiaries of a Texas financial institution.

- One subsidiary, The MoneyMaker Division, operated one of the largest ATM networks in the country.
- A second, The TransFirst Corporation, specialized in providing electronic benefits transfer services to government and health care agencies.
- The third, FTCC, provided processing services to two savings banks.

ACS has relied upon further development of each of these services and acquisitions to achieve its present success.

The revenues of ACS reached $140 million in 1990.

c. Key Products and Services

The Financial Services unit of ACS provides processing services for front- and back-office operations of banks, operates the ATM network, and handles electronic funds transfer and retail point-of-sale operations.

- Banking applications include deposit, savings, mortgage, retail lending, PC teller support, customer service and information files, and general ledger.
- Back-office services include bulk filing, statement preparation, microfilming, item capture, lockbox and remittance processing, proof and deposit services, and return item processing.

- EFT and POS services are also provided, including ACH, credit and debit card services, and other activities.

The TransFirst operation provides full service electronic benefit transfer processing services for government agency programs such as food stamps, aid to families and unemployment insurance.

- TransFirst can handle the distribution of cash or medical service benefits.

- TransFirst can distribute payments through ATMs and debit/credit terminals or by direct deposit.

The business of ACS has expanded to include systems operations and utility processing services to companies in the health, distribution, business services, manufacturing and other industries.

2. Anacomp, Inc., 11550 North Meridian St., P.O. Box 40888, Indianapolis, Indiana 46240

a. Company Strategy

Anacomp's current business strategy is to expand its COM product and service offerings, which cover information services and other offerings.

- Anacomp provides computer output microfilm (COM) services and a variety of "other" processing services to over 6,000 customers nationally through its micrographics service centers.

- Anacomp also provides a number of products and services related to the micrographics market that are not information services in nature.

b. Company Background

Anacomp was founded in 1968 to serve the COM market and provide related products and services. It began to market software products for the banking market and became one of the most important applications software product vendors in this market during the early 1980s. The company has returned to its original direction since that period.

COM business was up 6% to $114 million in calendar year 1990. Growth was down due to depressed spending in the banking and finance and government markets, which account for 60% of the firm's COM business.

c. Key Products and Services

In addition to COM services, Anacomp receives substantial income from micrographics products and services.

- COM can be provided in roll microfilm or on microfiche sheets. Anacomp has software products that can provide indexing and retrieval facilities to aid in the use of microfilm.

- The company also markets COM hardware and maintenance service for the hardware, as well as microfilm duplication service, source document microfilming, micrographics supplies, and computer tape and other products. None of these services or products can be classified as a processing service.

3. Automatic Data Processing, Inc., One ADP Boulevard, Roseland, N.J. 07068

a. Company Strategy

ADP's strategy is to provide quality computing and information services in markets that can meet its market share and growth goals.

- The core businesses which ADP has concentrated upon in accordance with that strategy include employer (human resources, particularly payroll) services, brokerage services, dealer (automotive and similar products) services, and automotive claims services.

- The core businesses account for about 90% of revenue.

The growth potential and strategic importance of core products is reviewed regularly. In addition to clear market leadership and long-term growth opportunities, ADP also looks for opportunities to leverage its market leadership and industry strength into related processing, communication and other information services opportunities.

b. Company Background

ADP was formed in 1949 as a payroll processing company. Starting in the 1960s, ADP began to diversify its business from payroll processing through an active acquisition program.

- Cross-industry accounting, banking, brokerage, automative dealer, distributor, insurer and other processing services businesses have been added to meet diversification goals.

- ADP now provides processing and network services and turnkey systems to over 200,000 clients worldwide.

Over 70% of ADP's calendar year revenues of $1.7 billion in 1990 came from processing services.

c. Key Products and Services

Employer services include payroll processing, payroll tax filing, unemployment compensation management, specialized management reporting, statistical and audit studies, employee record keeping, cost distribution analysis, automatic deposit, and withholding processing and reporting.

Payroll services are supplied in alternative forms, including a capability for small companies, interactive operation for larger companies, and a form that makes use of data entry from a PC.

In addition to providing on-line electronic pricing, the brokerage services of ADP include back-office brokerage processing, cage management, stock loan accounting, order matching, data collection, portfolio reporting and on-line trading.

Dealer services provides network services and turnkey systems to over 6,500 auto, truck, farm and heavy equipment dealers.

ADP Automotive Claims Services provides computerized estimating services related to auto collision repair and valuation to auto collision repair shops and to auto insurers. A parts location and valuation service is also provided by this activity.

Services for wholesale distributors and other markets are also provided by ADP.

4. Comdisco Disaster Recovery Services, Inc., 6111 North River Road, Rosemont, IL 60018

a. Company Strategy

The chief strategy of Comdisco Disaster Recovery is to provide disaster recovery processing services and associated consulting to subscribers in the U.S., Canada and overseas.

b. Company Background

Comdisco Disaster Recovery Services was founded in 1980 by Comdisco, a leasing company with revenue of about $2 billion. Comdisco's inventory of IBM equipment facilitated entry in the disaster recovery business.

Growth has been aided by alliances with MCI, Nomura Research and other firms.

Fiscal 1990 revenue reached $118 million, 36% above the revenue of the previous year.

c. Key Products and Services

The basic service consists of supplying access to alternative data centers, networks, and other capabilities, including a technical staff to minimize the impact of a disaster that has caused interruption in operation. Recovery service can include the following options:

- CDRS' continuous availability service, which provides for the simultaneous recording of transactions at a CDRS site for customers who depend on on-line transaction processing
- A network of fixed and mobile satellite earth stations that can bypass telephone control office switching equipment when there is a telephone company disaster
- The COMROC mobile computing center, which CDRS will provide at or near a customer's site, even in a parking lot if necessary, within a week of a disaster
- A disaster recovery software product, ComPAS, that uses an expert system to assist customers in developing, testing and maintaining a full recovery capability related to their industry and business environment
- A network capability that is being developed with MCI to provide transparent access to any of CDRS' recovery facilities

5. First Financial Management Corporation, 3 Corporate Square, Suite 700, Atlanta, GA. 30329

a. Company Strategy

Through the delivery of a wide range of processing services and financial industry services and products that depend on the use of information services, First Financial Management intends to be one of the leading suppliers of these types of services to financial institutions.

First Financial has relied chiefly on the acquisition of service firms in support of its strategies.

First Financial has also taken advantage of revenue opportunities in industries other than banking that have been obtained through its acquisitions program.

b. Company Background

First Financial began operations in 1971 with the supply of processing services to financial institutions, but didn't begin its period of rapid growth until 1983.

- Between 1983 and early 1991, 29 acquisitions were made that added $670 million in annual revenues.

- First Financial had 170 clients and 12 data centers in December 1982, and 70,000 clients serviced by 84 data centers in mid-1990.

In 1989, First Financial expanded from information services activities into thrift banking through the acquisition of Georgia Federal Bank. That acquisition gave First Financial access to the U.S. payments system for its commercial systems business, including membership in Mastercard and VISA associations.

Of its $864 million in annual revenues in calendar year 1990, about $739 million comes from processing services and $100 million from systems operations.

c. Key Products and Services

The Data Services organization offers processing and systems operations services to financial institutions; COM and micrographics services, data entry and conversion, and transaction processing for Medicaid and pharmaceutical claims; and miscellaneous information services capabilities.

The Merchant Services activity is delivered through NaBANCO, a wholly owned subsidiary.

- NaBANCO provides third-party credit card authorization, processing and settlement to over 50,000 customers in the U.S. and the Caribbean.

- In addition to serving a wide range of merchants from stores to utilities, NaBANCO's clients include fast food chains, theaters and supermarkets.

- Cash consolidation and specialty data capture are offered, as well as on-line address verification for mail order merchants.

- First Financial has software products that facilitate authorization and settlement through PC systems.

The MicroBilt subsidiary markets and supports turnkeys for credit verification, electronic form processing for the health care industry, and other applications.

First Financial also sells and leases equipment, including terminals that are used in conjunction with its processing services.

6. Litton Computer Services, 4747 Hellyer Ave., San Jose, CA 95138

a. Company Strategy

Litton is using its strength in providing professional and processing services in the commercial, federal and state and local government markets to move into the faster growing delivery modes of systems integration and, particularly, systems operations. In 1990, Litton disclosed outsourcing agreements to supply systems operations services to the retail distribution market.

b. Company Background

Litton Computer Services was originally developed from the organization that met the information systems needs of Litton Corporation. About 30% of the work of Litton Computer Services is now captive work, devoted to the support of its parent, Litton Industries.

About $90 million of the 1990 calendar revenue of Litton was noncaptive and $24 million of that was from processing services. Systems operations services accounted for about $20 million.

c. Key Products and Services

Litton provides processing services to over 600 clients from processing centers in Virginia, Massachusetts and California.

Litton offers dedicated machine environments, general financial and data base software products, and utility processing services, as well as access to application products including:

- Medical Eligibility System
- Accounts Payable
- Customer Information System
- Distribution Transaction Data Base System
- Facilities Management System
- ICS Budget Entry System
- Financial and Consolidation System
- Fixed Asset Control System
- Hazardous Material Reference System

In support of its credit card processing work for the retail distribution market, Litton is using software products developed by Alpha Data Utility.

Litton Computer Services is known in and has continuing work with the federal government in the areas of space and logistics systems and engineering services.

7. Shared Medical Systems Corporation, 51 Valley Stream Parkway, Malvern, PA 19355

a. Company Strategy

Shared Medical Systems is devoted to providing information services to the health care industry: hospitals, clinics, and physician groups.

b. Company Background

Shared Medical was formed in 1969. Originally a provider of processing services, the company has added software products, professional services, turnkey systems and systems operations to its information services offerings. The company also leases hardware to clients

Calendar year revenues in 1990 amounted to $383 million, of which $131 million came from processing services and $134 million came from systems operations.

c. Key Products and Services

Shared Medical offers a complete set of over 100 financial, administrative, decision support, clinical management, physicians' and other application systems to meet the needs of hospitals and physicians' groups.

The company's application systems are provided through processing services or with mainframes or minicomputers to meet the needs of hospitals of various sizes.

Systems are also available to meet nursing, radiology, laboratory and pharmacy office or group needs.

A physicians' office system is also available on a PC to serve small physician practices of up to five people.

Conclusions and Recommendations

A

Conclusions

One of the primary conclusions that can be made about the processing business, as indicated in Exhibit VIII-1, is that many users will continue to rely on processing vendors for certain types of work:

- Many small to midsized employers will continue to rely on processing firms for payroll.
- Many merchants will continue to use third-party processors for credit card and other plastic card-related processing.
- Third-party processors will be used for insurance claims processing.
- Banks and other financial institutions will find it economic to use processing firms for back-office functions.

EXHIBIT VIII-1

Conclusions

- Continuing reliance on processing vendors
- Erosion of some work
- Increasing service commitments
- Expanding use of networks
- Required upgrades of capabilities
- Ongoing mergers
- Interest in systems operations

Although there will be steady erosion of some processing work when clients move it in-house in accordance with information systems or business plans, there will be continuing application processing work in situations where the processing vendor's economies of scale and knowledge of the application system make it desirable to use a processing service.

Vendors of processing services have to be prepared for steadily increasing commitments, however, as illustrated in Exhibit VIII-1.

- Service commitments steadily increase for reports for government or client offices, for changes in processing schedules and to handle new transactions or processing features. Some processors use current services such as accurate filing of government reports as a sales point, but the need to constantly add services must be anticipated.

- Processors are also faced with an ongoing need to upgrade their information systems, application systems and network capabilities.

The expanding use of networks is characteristic of many processing vendors, as noted in Exhibit VIII-1.

- Third-party transaction processing, utility processing that enables a client to use the information systems capabilities of vendors, and disaster recovery services all require vendors to make use of networks.

- Even payroll processing that makes use of data entry from PCs at customer facilities and terminals at remote clients requires that attention be given to the use of network capabilities.

Another characteristic of processing services is the tendency for companies to merge. New processors provide opportunities for established processors to add to their customer base and achieve additional economies, and they may also provide ideas for improving services or new software products.

Another conclusion that should be considered in regard to processing services is the growing respect that some processing vendors have received from users for their systems operations sales or potential, as noted in Exhibit VIII-1.

- News items that describe the savings that large users expect to realize from systems operations have aroused interest in many companies.

- This news has forced many users to recognize that large processing companies have efficiencies in operations and advantages in upgrading their equipment, networks and application systems based on past experience.

B
Recommendations

In view of the fact that upgrades of services and capabilities will steadily be made, many processing vendors should plan more for these, as noted in Exhibit VIII-2.

EXHIBIT VIII-2

Recommendations

- Review planning for expansion of services and upgrades
- Use "creative" pricing to pay for changes and to gain business
- Review other opportunities in information services
- Explore opportunities to offer systems operations
- Review competitive activities
- Advertise and promote actions aggressively

- Some of the larger vendors have activities in place to keep track of approved changes and existing schedules for upgrades so that emerging needs can be evaluated and schedules adjusted if warranted.

- A number of vendors are more reactive to situations that could involve new business, however.

Requests or demands of users for improvements or changes are not always accompanied by agreements to help defray the costs.

- Users may feel that competition among processing vendors should justify the request, or they may be attempting to improve the productivity of vendors, as they are doing with internal functions.

- Processing vendors should consider using creative pricing that will help them pay for changes as well as attract new business. At the simplest level, this could involve price breaks for numbers of accounts or transactions, or separate pricing for services that were formerly combined.

Another recommendation listed in Exhibit VIII-2 concerns the need to review other opportunities in information services.

- Vendors with processing business in industries where prices need to be looked up for items being ordered on a frequent basis, or where payment could be initiated from a terminal or workstation, might find that they could interest clients in the use of electronic information services and/or EDI. Processing vendors have made such moves in the recent past.

- Processing vendors might find that they have applications software products that could be sold separately from processing. This has been done by several vendors.

- Processing vendors might also find that their knowledge of industries and application systems makes it possible for them to offer consulting or other professional services, systems integration, or systems operations services. A group of processing vendors, particularly vendors serving the banking and finance market, has taken steps to offer systems operations.

Vendors should keep track of competitive actions involving new features, pricing strategies, modes of service, upgrades and markets served. These actions might have to be countered, or they might provide ideas that should be copied or improved upon.

When actions are taken with pricing, features or upgrades to increase business, they should be tested with market research and introduced in a manner that will have a strong effect. Several leading vendors feel that they have an advantage in knowing how to advertise or inform customers and prospects of steps that can increase service or perhaps lower prices.

Definition of Terms

A

Introduction

INPUT's *Definition of Terms* provides the framework for all of INPUT's market analyses and forecasts of the information services industry. It is used for all U.S. programs. The structure defined in Exhibit A-1 is also used in Europe and for the worldwide forecast.

One of the strengths of INPUT's market analysis services is the consistency of the underlying market sizing and forecast data. Each year INPUT reviews its industry structure and makes changes if they are required. When changes are made they are carefully documented and the new definitions and forecasts reconciled to the prior definitions and forecasts. INPUT clients have the benefit of being able to track market forecast data from year to year against a proven and consistent foundation of definitions.

The changes made in INPUT definitions this year are as follows:

- *Systems Operations Submodes* - the submodes of systems operations have been redefined from processing services and professional services to platform systems operations and applications systems operations.
- *Business Services Industry* - the industry sectors of business services and personal services have been combined into a single business services sector.
- *Transportation Industry* - the information services expenditures relating to airline reservation systems have been returned to the transportation sector where they resided prior to 1990.

B

Overall Definitions and Analytical Framework

1. Information Services

Information Services are computer/telecommunications-related products and services that are oriented toward the development or use of information systems. Information services typically involve one or more of the following:

- Processing of specific applications using vendor-provided systems (called *Processing Services*)
- A combination of hardware, packaged software and associated support services which will meet a specific application processing need (called *Turnkey Systems*)
- Packaged software products, either systems software or applications software products (called *Software Products*)
- People services that support users in developing and operating their own information systems (called *Professional Services*)
- Bundled combinations of products and services where the vendor assumes total responsibility for the development of a custom solution to an information systems problem (called *Systems Integration*)
- Services that provide operation and management of all or a significant part of a user's information systems functions under a long-term contract (called *Systems Operations*)
- Services associated with the delivery of information in electronic form—typically network-oriented services such as value-added networks, electronic mail and document interchange, on-line data bases, on-line news and data feeds, etc. (called *Network Services*)

In general, the market for information services does not involve providing equipment to users. The exception is where the equipment is bundled as part of an overall service offering such as a turnkey system, a systems operations contract, or a systems integration project.

The information services market also excludes pure data transport services (i.e., data or voice communications circuits). However, where information transport is associated with a network-based service (e.g., EDI or VAN services), or cannot be feasibly separated from other bundled services (e.g., some systems operations contracts), the transport costs are included as part of the services market.

The analytical framework of the information services industry consists of the following interacting factors: overall and industry-specific business environment (trends, events and issues); technology environment; user

information system requirements; size and structure of information services markets; vendors and their products, services and revenues; distribution channels; and competitive issues.

2. Market Forecasts/User Expenditures

All information services market forecasts are estimates of *User Expenditures* for information services. When questions arise about the proper place to count these expenditures, INPUT addresses them from the user's viewpoint: expenditures are categorized according to what users perceive they are buying.

By focusing on user expenditures, INPUT avoids two problems which are related to the distribution channels for various categories of services:

- Double counting, which can occur by estimating total vendor revenues when there is significant reselling within the industry (e.g., software sales to turnkey vendors for repackaging and resale to end users)
- Missed counting, which can occur when sales to end users go through indirect channels such as mail order retailers

Captive Information Services User Expenditures are expenditures for products and services provided by a vendor that is part of the same parent corporation as the user. These expenditures are not included in INPUT forecasts.

Non-captive Information Services User Expenditures are expenditures that go to vendors that have a different parent corporation than the user. It is these expenditures which constitute the information services market analyzed by INPUT and that are included in INPUT forecasts.

3. Delivery Modes

Delivery Modes are defined as specific products and services that satisfy a given user need. While *Market Sectors* specify *who* the buyer is, *Delivery Modes* specify *what* the user is buying.

Of the eight delivery modes defined by INPUT, five are considered primary products or services:

- *Processing Services*
- *Network Services*
- *Professional Services*
- *Applications Software Products*
- *Systems Software Products*

The remaining three delivery modes represent combinations of these products and services, bundled together with equipment, management and/or other services:

- *Turnkey Systems*
- *Systems Operations*
- *Systems Integration*

Section C describes the delivery modes and their structure in more detail.

4. Market Sectors

Market Sectors or markets are groupings or categories of the users who purchase information services. There are three types of user markets:

- *Vertical Industry* markets, such as Banking, Transportation, Utilities, etc. These are called "industry-specific" markets.
- *Functional Application* markets, such as Human Resources, Accounting, etc. These are called "cross-industry" markets.
- *Other* markets, which are neither industry- nor application-specific, such as the market for systems software products and much of the on-line data base market.

Specific market sectors used by INPUT are defined in Section E, below.

5. Other

Outsourcing is defined as the contracting of information systems functions to outside vendors. Outsourcing should be viewed as the opposite of *insourcing*: anything that information systems management has considered feasible to do internally (e.g., data center operations, applications development and maintenance, network management, training, etc.) is a potential candidate for outsourcing.

Information systems has always bought systems software, as it is infeasible for companies to develop it internally. However, all other delivery modes represent functions or products that information systems management could choose to perform or develop in-house. Viewed this way, outsourcing is the result of a make-or-buy decision, and the outsourcing market covers any product or service where the vendor must compete against the client firm's own internal resources. Therefore, the entire information services industry can be considered an outsourcing market.

C

Delivery Modes and Submodes

Exhibit A-1 provides the overall structure of the information services industry as defined and used by INPUT. This section of *Definition of Terms* provides definitions for each of the delivery modes and their submodes or components.

EXHIBIT A-1

Information Services Industry Structure—1991

Source: INPUT

1. Software Products

INPUT divides the software products market into two delivery modes: systems software and applications software.

The two delivery modes have many similarities. Both involve user purchases of software packages for in-house computer systems. Included are both lease and purchase expenditures, as well as expenditures for work performed by the vendor to implement or maintain the package at the user's sites. Vendor-provided training or support in operation and use of the package, if bundled in the software pricing, is also included here.

Expenditures for work performed by organizations other than the package vendor are counted in the professional services delivery mode. Fees for work related to education, consulting, and/or custom modification of software products are counted as professional services, provided such fees are charged separately from the price of the software product itself.

a. Systems Software Products

Systems software products enable the computer/communications system to perform basic machine-oriented or user interface functions. INPUT divides systems software products into three submodes.

- *Systems Control Products* - Software programs that function during application program execution to manage computer system resources and control the execution of the application program. These products include operating systems, emulators, network control, library control, windowing, access control, and spoolers.

- *Operations Management Tools* - Software programs used by operations personnel to manage the computer system and/or network resources and personnel more effectively. Included are performance measurement, job accounting, computer operation scheduling, disk management utilities, and capacity management.

- *Applications Development Tools* - Software programs used to prepare applications for execution by assisting in designing, programming, testing, and related functions. Included are traditional programming languages, 4GLs, data dictionaries, data base management systems, report writers, project control systems, CASE systems and other development productivity aids. Also included are system utilities (e.g., sorts) which are directly invoked by an applications program.

INPUT also forecasts the systems software products delivery mode by platform level: mainframe, minicomputer and workstation/PC.

b. Applications Software Products

Applications software products enable a user or group of users to support an operational or administrative process within an organization. Examples include accounts payable, order entry, project management and office systems. INPUT categorizes applications software products into two submodes.

- *Industry-Specific Applications Software Products* - Software products that perform functions related to fulfilling business or organizational needs unique to a specific industry (vertical) market and sold to that market only. Examples include demand deposit accounting, MRPII, medical record keeping, automobile dealer parts inventory, etc.

- *Cross-Industry Applications Software Products* - Software products that perform a specific function that is applicable to a wide range of industry sectors. Examples include payroll and human resource systems, accounting systems, word processing and graphics systems, spreadsheets, etc.

INPUT also forecasts the applications software products delivery mode by platform level: mainframe, minicomputer and workstation/PC.

2. Turnkey Systems

A turnkey system is an integration of equipment (CPU, peripherals, etc.), systems software, and packaged or custom application software into a single product developed to meet a specific set of user requirements. Value added by the turnkey system vendor is primarily in the software and support services provided. Most CAD/CAM systems and many small business systems are turnkey systems. Turnkey systems utilize standard computers and do not include specialized hardware such as word processors, cash registers, process control systems, or embedded computer systems for military applications.

Computer manufacturers (e.g., IBM or DEC) that combine software with their own general-purpose hardware are not classified by INPUT as turnkey vendors. Their software revenues are included in the appropriate software category.

Most turnkey systems are sold through channels known as value-added resellers.

- *Value-Added Reseller (VAR):* A VAR adds value to computer hardware and/or software and then resells it to an end user. The major value added is usually applications software for a vertical or cross-industry market, but also includes many of the other components of a turnkey systems solution, such as professional services.

Turnkey systems have three components:

- Equipment - computer hardware supplied as part of the turnkey system
- Software products - prepackaged systems and applications software products
- Professional services - services to install or customize the system or train the user, provided as part of the turnkey system sale

3. Processing Services

This delivery mode includes three submodes: transaction processing, utility processing, and "other" processing services.

- *Transaction Processing* - Client uses vendor-provided information systems—including hardware, software and/or data networks—at the vendor site or customer site to process transactions and update client data bases. Transactions may be entered in one of four modes:
  - *Interactive* - Characterized by the interaction of the user with the system for data entry, transaction processing, problem solving and report preparation: the user is on-line to the programs/files stored on the vendor's system.
  - *Remote Batch* - Where the user transmits batches of transaction data to the vendor's system, allowing the vendor to schedule job execution according to overall client priorities and resource requirements.
  - *Distributed Services* - Where users maintain portions of an application data base and enter or process some transaction data at their own site, while also being connected through communications networks to the vendor's central systems for processing other parts of the application.
  - *Carry-in Batch* - Where users physically deliver work to a processing services vendor.
- *Utility Processing* - Vendor provides basic software tools (language compilers, assemblers, DBMSs, graphics packages, mathematical models, scientific library routines, etc.), generic applications programs and/or data bases, enabling clients to develop their own programs or process data on the vendor's system.
- *Other Processing Services* - Vendor provides service—usually at the vendor site—such as scanning and other data entry services, laser printing, computer output microfilm (COM), CD preparation and other data output services, backup and disaster recovery, etc.

4. Systems Operations

Systems operations was a new delivery mode introduced in the 1990 Market Analysis and Systems Operations programs. It was created by taking the Systems Operations submode out of both Processing Services and Professional Services. For 1991 the submodes have been redefined as indicated below.

Systems operations involves the operation and management of all or a significant part of the user's information systems functions under a long-term contract. These services can be provided in either of two distinct submodes where the difference is whether the support of applications, as well as data center operations, is included.

- *Platform systems operations* - the vendor manages and operates the computer systems, often including telecommunications networks, without taking responsibility for the user's application systems.

- *Applications systems operations* - the vendor manages and operates the computer systems, often including telecommunications networks, and is also responsible for maintaining, or developing and maintaining, the user's application systems.

In the federal government market. systems operation services are also defined by equipment ownership with the terms "COCO" (Contractor-Owned, Contractor-Operated), and "GOCO" (Government-Owned, Contractor-Operated).

The ownership of the equipment, which was the previous basis for the systems operations submodes, is no longer considered critical to the commercial market. Most of the market consists of systems operations relationships using vendor-owned hardware. What is now critical is the breadth of the vendor/client relationship as it expands beyond data center management to applications management.

Systems operations vendors now provide a wide variety of services in support of existing information systems. The vendor can plan, control, provide, operate, maintain and manage any or all components of the user's information systems (equipment, networks, systems and/or application software), either at the client's site or the vendor's site. Systems operations can also be referred to as "resource management" or "facilities management."

5. Systems Integration (SI)

Systems integration is a vendor service that provides a complete solution to an information system, networking or automation requirement through the custom selection and implementation of a variety of information

system products and services. A systems integrator is responsible for the overall management of a systems integration contract and is the single point of contact and responsibility to the buyer for the delivery of the specified system function, on schedule and at the contracted price.

To be included in the information services market, systems integration projects must involve some application processing component. In addition, the majority of cost must be associated with information systems products and/or services.

- *Equipment* - information processing and communications equipment required to build the systems solution. This component may include custom as well as off-the-shelf equipment to meet the unique needs of the project. The systems integration equipment category excludes turnkey systems by definition.

- *Software products* - prepackaged applications and systems software products.

- *Professional services* - the value-added component that adapts the equipment and develops, assembles, or modifies the software and hardware to meet the system's requirements. It includes all of the professional services activities required to develop, and if included in the contract, operate an information system, including consulting, program/project management, design and integration, software development, education and training, documentation, and systems operations and maintenance.

- *Other services* - most systems integration contracts include other services and product expenditures that are not easily classified elsewhere. This category includes miscellaneous items such as engineering services, automation equipment, computer supplies, business support services and supplies, and other items required for a smooth development effort.

Systems integrators perform, or manage others who perform, most or all of the following functions:

- Program management, including subcontractor management
- Needs analysis
- Specification development
- Conceptual and detailed systems design and architecture
- System component selection, modification, integration and customization
- Custom software design and development
- Custom hardware design and development
- Systems implementation, including testing, conversion and post-implementation evaluation and tuning

- Life cycle support, including
  - System documentation and user training
  - Systems operations during development
  - Systems maintenance

6. Professional Services

This category includes three submodes: consulting, education and training, and software development.

- *Consulting:* Services include management consulting (related to information systems), information systems consulting, feasibility analysis and cost-effectiveness studies, and project management assistance. Services may be related to any aspect of the information system, including equipment, software, networks and systems operations.

- *Education and Training:* Products and services related to information systems and services for the professional and end user, including computer-aided instruction, computer-based education, and vendor instruction of user personnel in operations, design, programming, and documentation.

- *Software Development:* Services include user requirements definition, systems design, contract programming, documentation, and implementation of software performed on a custom basis. Conversion and maintenance services are also included.

7. Network Services

Network services typically include a wide variety of network-based functions and operations. Their common thread is that most of these functions could not be performed without network involvement. Network services is divided into two submodes: *Electronic Information Services,* which involve selling information to the user, and *Network Applications,* which involve providing some form of enhanced transport service in support of a user's information processing needs.

a. Electronic Information Services

Electronic information services are data bases that provide specific information via terminal- or computer-based inquiry, including items such as stock prices, legal precedents, economic indicators, periodical literature, medical diagnosis, airline schedules, automobile valuations, etc. The terminals used may be computers themselves, such as communications servers or personal computers. Users typically inquire into and extract information from the data bases. Although users may load extracted data into their own computer systems, the electronic information

vendor provides no data processing or manipulation capability and the users cannot update the vendor's data bases.

The two kinds of electronic information services are:

- *On-line Data Bases* - Structured, primarily numerical data on economic and demographic trends, financial instruments, companies, products, materials, etc.

- *News Services* - Unstructured, primarily textual information on people, companies, events, etc.

While electronic information services have traditionally been delivered via networks, there is a growing trend toward the use of CD ROM optical disks to support or supplant on-line services, and these optical disk-based systems are included in the definition of this delivery mode.

b. Network Applications

Value-Added Network Services (VAN Services) - VAN services are enhanced transport services which involve adding such functions as automatic error detection and correction, protocol conversion, and store-and-forward message switching to the provision of basic network circuits.

While VAN services were originally provided only by specialized VAN carriers (Tymnet, Telenet, etc.), today these services are also offered by traditional common carriers (AT&T, Sprint, etc.). Meanwhile, the VAN carriers have also branched into the traditional common carriers' markets and are offering unenhanced basic network circuits as well.

INPUT's market definition covers VAN services only, but includes the VAN revenues of all types of carriers. The following are examples of VAN services.

- *Electronic Data Interchange (EDI)* - Application-to-application exchange of standardized business documents between trade partners or facilitators. This exchange is commonly performed using VAN services. Specialized translation software is typically employed to convert data from organizations' internal file formats to EDI interchange standards. This software may be provided as part of the VAN service or may be resident on the organization's own computers.

- *Electronic Information Exchange (EIE)* - Also known as electronic mail (E-mail), EIE involves the transmission of messages across an electronic network managed by a services vendor, including facsimile transmission (FAX), voice mail, voice messaging, and access to Telex,

TWX, and other messaging services. This also includes bulletin board services.

- *Other Network Services* - This segment contains videotex and pure network management services. Videotex is actually more a delivery mode than an application. Its prime focus is on the individual as a consumer or in business. These services provide interactive access to data bases and offer the inquirer the ability to send as well as receive information for such purposes as home shopping, home banking, travel reservations, and more.

  Network management services included here must involve the vendor's network and network management systems as well as people. People-only services are included in professional services that involve the management of networks as part of the broader task of managing a user's information processing functions are included in systems operations.

D
Sector Definitions

1. Industry Sector Definitions

INPUT has structured the information services market into 15 generic industry sectors, such as process manufacturing, insurance, transportation, etc. The definitions of these sectors are based on the 1987 revision of the Standard Industrial Classification (SIC) Code system. The specific industries (and their SIC Codes) included under these generic industry sectors are detailed in Exhibit A-2.

EXHIBIT A-2

Industry Sector Definitions

Industry Sector	SIC Code	Description
Discrete Manufacturing	23xx	Apparel and other finished products
	25xx	Furniture and fixtures
	27xx	Printing, publishing and allied industries
	31xx	Leather and leather products
	34xx	Fabricated metal products, except machinery and transportation equipment
	35xx	Industrial and commercial machinery and computer equipment
	36xx	Electronic and other electrical equipment and components, except computer equipment
	37xx	Transportation equipment
	38xx	Instruments; photo/med/optical goods; watches/clocks
	39xx	Miscellaneous manufacturing industry
Process Manufacturing	10xx	Metal mining
	12xx	Coal mining
	13xx	Oil and gas extraction
	14xx	Mining/quarrying nonmetalic minerals
	20xx	Food and kindred products
	21xx	Tobacco products
	22xx	Textile mill products
	24xx	Lumber and wood products, except furniture
	26xx	Paper and allied products
	28xx	Chemicals and allied products
	29xx	Petroleum refining and related industries
	30xx	Rubber and miscellaneous plastic products
	32xx	Stone, clay, glass and concrete products
	33xx	Primary metal industries
Transportation Services	40xx	Railroad transport
	41xx	Public transit/transport
	42xx	Motor freight transport/warehousing
	43xx	U.S. Postal Service
	44xx	Water transportation
	45xx	Air transportation (including airline reservation services in 4512)
	46xx	Pipelines, except natural gas
	47xx	Transportation services (including 472x, arrangement of passenger transportation)

EXHIBIT A-2 (CONT.)

Industry Sector Definitions

Industry Sector	SIC Code	Description
Utilities	49xx	Electric, gas and sanitary services
Telecommunications	48xx	Communications
Retail Distribution	52xx	Building materials
	53xx	General merchandise stores
	54xx	Food stores
	55xx	Automotive dealers, gas stations
	56xx	Apparel and accessory stores
	57xx	Home furniture, furnishings and accessory stores
	58xx	Eating and drinking places
	59xx	Miscellaneous retail
Wholesale Distribution	50xx	Wholesale trade - durable goods
	51xx	Wholesale trade - nondurable goods
Banking and Finance	60xx	Depositary institutions
	61xx	Nondepositary institutions
	62xx	Security and commodity brokers, dealers, exchanges and services
	67xx	Holding and other investment offices
Insurance	63xx	Insurance carriers
	64xx	Insurance agents, brokers and services
Health Services	80xx	Health services
Education	82xx	Educational services

EXHIBIT A-2 (CONT.)

Industry Sector Definitions

Industry Sector	SIC Code	Description
Business Services	65xx	Real estate
	70xx	Hotels, rooming houses, camps, and other lodging places
	72xx	Personal services
	73xx	Business services (except hotel reservation services in 7389)
	7389x	Hotel reservation services
	75xx	Automotive repair, services and parking
	76xx	Miscellaneous repair services
	78xx	Motion pictures
	79xx	Amusement and recreation services
	81xx	Legal services
	83xx	Social services
	84xx	Museums, art galleries, and botanical/zoological gardens
	86xx	Membership organizations
	87xx	Engineering, accounting, research, management, and related services
	89xx	Miscellaneous services
Federal Government	9xxx	
State and Local Government	9xxx	
Miscellaneous Industries	01xx	Agricultural production - crops
	02xx	Agricultural production - livestock/animals
	07xx	Agricultural services
	08xx	Forestry
	09xx	Fishing, hunting and trapping
	15xx	Building construction - general contractors, operative builders
	16xx	Heavy construction - contractors
	17xx	Construction - special trade contractors

2. Cross-Industry Sector Definitions

In addition to these vertical industry sectors, INPUT has identified seven cross-industry or horizontal market sectors. These sectors or markets involve multi-industry applications such as human resource systems, accounting systems, etc. In order to be included in an industry sector, the service or product delivered must be specific to that sector only. If a service or product is used in more than one industry sector, it is counted as cross-industry. The seven cross-industry markets are:

Accounting - consists of applications software products and information services that serve such functions as:

- General ledger
- Accounts payable
- Accounts receivable
- Billing/invoicing
- Fixed assets
- International accounting
- Purchasing
- Taxation
- Financial consolidation

• Excluded are accounting products and services directed to a specific industry, such as tax processing services for CPAs and accountants within the business services industry sector.

Human Resources - consists of application solutions purchased by multiple industry sectors to serve the functions of human resources management and payroll. Examples of specific applications within these two major functions are:

- Employee relations
- Benefits administration
- Government compliance
- Manpower planning
- Compensation administration
- Applicant tracking
- Position control
- Payroll processing

Education and Training - consists of education and training for information systems professionals and users of information systems, as well as the use of computer-based training tools for the training of any employee on any subject.

- The education and training cross-industry sector only considers education and training offered for a noncaptive market; in other words, this sector does not include educational services provided by information services vendors to their customers for training on their own products.

- Education and training that is provided in a classroom setting, live, is not included in this cross-industry sector. This sector is not to be confused with the education industry-specific sector, the subject of another MAP report, which addresses primary and secondary education as a vertical market for IS services.

Office Systems consists of the following:

- Integrated office systems (IOS)
- Word processing
- Desktop publishing
- Graphics

- IOSs—such as IBM's OfficeVision, HP's NewWave Office and DEC's All-In-1—typically include the following core functions, all of which are accessed from the same desktop: electronic mail, decision support systems, time management and filing systems.

- Office systems graphics include presentation graphics (which represent the bulk of office systems graphics), paint and line art, page description languages, and electronic form programs.

Engineering and Scientific encompasses the following applications:

- Computer-aided design and engineering (CAD and CAE)
- Structural analysis
- Statistics/mathematics/operations research
- Mapping

- Computer-aided manufacturing (CAM) or CAD that is integrated with CAM is excluded from the cross-industry sector as it is specific to the manufacturing industries. CAD or CAE that is dedicated to integrated circuit design is also excluded because it is specific to the semiconductor industry.

Planning and Analysis consists of software products and information services in four application areas:

- Executive Information Systems (EIS)
- Financial modeling or planning systems
- Spreadsheets
- Project management

Other encompasses marketing/sales and electronic publishing application solutions.

- Sales and marketing includes:
  - Sales analysis
  - Marketing management
  - Demographic market planning models
- The fundamental difference between electronic publishing and desktop publishing (within the office systems sector) is that electronic publishing encompasses a method of document management and control from a single point—regardless of how many authors/locations work on a document—whereas desktop publishing is a personal productivity tool and is generally a lower end product residing on a personal computer.
- Electronic or computer publishing systems that are sold strictly and specifically to commercial publishers, printers, and typesetters are excluded from cross-industry consideration and are included in the discrete manufacturing industry.

3. Delivery Mode Reporting by Sector

This section describes how the delivery mode forecasts relate to the market sector forecasts. Exhibit A-3 summarizes the relationships.

- *Processing services* - the transaction processing services submode is forecasted for each industry and cross-industry market sector. The utility and other processing services submodes are not considered industry or cross-industry specific and are only forecasted for the total market.
- *Turnkey systems* - all of the turnkey systems delivery mode is considered either industry or cross-industry specific and is forecasted for the 15 industry and 7 cross-industry sectors. Each component of turnkey systems (equipment, software products and professional services) is forecasted by market sector.
- *Applications software products* - all of the applications software products delivery mode is considered either industry or cross-industry specific and is forecasted for the 15 industry and 7 cross-industry sectors. In addition, each forecast is broken down by platform level: mainframe, minicomputer and workstation/PC.
- *Systems operations* - all of systems operations is considered industry specific. Each of the submodes (platform and applications systems operations) is forecasted for each of the 15 industry sectors.

EXHIBIT A-3

Delivery Mode versus Market Sector Forecast Content

Delivery Mode	Submode	Market Sectors		
		Industry Sectors	Cross-Industry Sectors	Other
Processing Services	Transaction	X	X	
	Utility			X
	Other			X
Turnkey Systems		X	X	
Applications Software Products		X	X	
Systems Operations	Platform	X		
	Applications	X		
Systems Integration		X		
Professional Services		X		
Network Services	Network Applications	X		
	Electronic Information Services	X		X
Systems Software Products				X

- *Systems integration* - all of systems integration is considered industry specific. Each of the components of systems integration (equipment, software products, professional services and other services) is forecasted for each of the 15 industry sectors.
- *Professional services* - all of professional services is considered industry specific. Each of the submodes (consulting, education and training, and software development) is forecasted for each of the 15 industry sectors.
- *Network services* - all of the network applications submode of network services is considered industry specific and is forecasted for each of the 15 industry sectors. The electronic information services submode is considered to have both industry-specific and non-specific elements.

The forecast for electronic information systems includes forecasts for the 15 industry sectors as well as an additional forecast component that applies to the market as a whole.

- *Systems software products* - All of the submodes (systems control, operations management, applications development) are considered neither industry- nor cross-industry specific. They are only forecasted in total. In addition, each submode forecast is broken down by platform level: mainframe, minicomputer and workstation/PC.

E

Vendor Revenue and User Expenditure Conversion

The size of the information services market may be viewed from two perspectives: vendor (producer) revenues and user expenditures. While the primary data for INPUT's research is vendor interviews, INPUT defines and forecasts the information services market in terms of end-user expenditures. End-user expenditures reflect the markup in producer sales when a product such as software is delivered through indirect distribution channels (such as original equipment manufacturers (OEMs), retailers and distributors). The focus on end-user expenditure also eliminates the double counting of revenues that would occur if sales were tabulated for both producer (e.g., Lotus) and distributor (e.g., BusinessLand).

For most delivery modes, vendor revenues and user expenditures are fairly close. However, there are some areas of significant difference. Many microcomputer software products, for example, are marketed through indirect distribution channels. To capture the valued added through these indirect distribution channels, adjustment factors that incorporate industry discount ratios are used to convert estimated information services vendor revenues to end-user expenditures.

For some delivery modes, including software products, systems integration and turnkey systems, there is a significant volume of intra-industry sales. For example, systems integrators purchase software and subcontract the services of other professional services vendors. And turnkey vendors incorporate purchased software into the systems they sell to end users.

To account for such intra-industry transactions, INPUT uses other conversion ratios to derive the estimate of end-user expenditures.

Exhibit A-4 summarizes the net effect of the various ratios used by INPUT to convert vendor revenues to end-user expenditure (market size) figures for each delivery mode.

EXHIBIT A-4

Vendor Revenue to User Expenditure Conversion

Delivery Mode	Vendor Revenue Multiplier
Applications Software Products	1.18
Systems Software Products	1.10
Systems Operations	1.00
Systems Integration	0.99
Professional Services	0.99
Network Services	0.99
Processing Services	0.99
Turnkey Systems	0.95

Forecast Data Base

A

Forecast Data Base

Exhibit B-1 presents the detailed 1991-1996 forecast for the processing services market.

B

Forecast Reconciliation

The forecast reconciliation for the processing services market is shown in Exhibit B-2.

- Processing services continues to be a relatively stable market on an aggregate basis that has shown a drop of only 1% from the previously forecast CAGR.
- There are weaknesses in certain areas of the transaction processing market, but continuing strength in "other" processing services driven by the growth of disaster recovery services.

Several of the largest changes in the processing services market have been brought about by the shift of work from one marketplace to another.

- $575 million of user expenditures were moved from the cross-industry accounting market to business services in 1990 to take account of the sizable amount of customization that has altered cross-industry accounting applications so that they can be used by business services firms to meet the needs of their customers.

EXHIBIT B-1

Processing Services
User Expenditure Forecast by Market Sector, 1990-1996
($ Millions)

Market Sector	1990 ($M)	Growth 90-91 (%)	1991 ($M)	1992 ($M)	1993 ($M)	1994 ($M)	1995 ($M)	1996 ($M)	CAGR 91-96 (%)
Delivery Mode Total	17,023	7	18,274	19,661	21,210	22,857	24,650	26,639	8
Vertical Industry Markets	11,441	7	12,189	13,021	13,933	14,919	15,993	17,159	7
Discrete Manufacturing	795	5	838	875	915	956	994	1,038	5
Process Manufacturing	681	5	717	743	778	815	853	895	5
Transportation	2,030	2	2,070	2,183	2,360	2,552	2,758	2,980	8
Utilities	201	8	217	248	283	322	367	421	14
Telecommunications	895	14	1,020	1,173	1,349	1,552	1,785	2,052	15
Retail Distribution	165	5	174	183	197	211	226	243	7
Wholesale Distribution	289	7	310	334	360	388	419	452	8
Banking and Finance	3,100	11	3,440	3,757	4,033	4,328	4,646	4,988	8
Insurance	351	7	375	402	431	462	495	530	7
Medical	500	5	526	551	577	604	632	660	5
Education	185	3	191	196	201	207	213	218	3
Business Services	1,644	3	1,692	1,722	1,751	1,778	1,807	1,824	2
Federal Government	200	-6	187	193	200	206	213	220	3
State and Local Govt.	257	12	288	322	361	404	453	507	12
Miscellaneous Industries	148	-3	144	139	137	134	132	131	-2
Cross-Industry Markets	2,654	7	2,831	2,993	3,182	3,337	3,476	3,636	5
Accounting	146	3	150	155	160	165	170	175	3
Education and Training	95	0	95	89	83	78	73	68	-6
Engineering and Scientific	123	4	128	129	129	130	131	131	1
Human Resources	1,523	10	1,676	1,844	2,030	2,180	2,310	2,460	8
Office Systems	38	-3	36	34	32	30	28	26	-6
Planning and Analysis	205	-7	190	167	147	129	114	108	-12
Other Cross-Industry	525	6	556	575	601	625	650	676	4
Generic Markets	2,928	11	3,254	3,647	4,095	4,601	5,181	5,844	12
Processing Services									
- Utility	898	5	943	990	1,040	1,091	1,146	1,204	5
- Other	2,030	14	2,311	2,657	3,055	3,510	4,035	4,640	15

EXHIBIT B-2

Processing Services
1991 Data Base Reconciliation
($ Millions)

Market Sector	1990 Market				1995 Market				90-95 CAGR per data 90 rpt (%)	90-95 CAGR per data 91 rpt (%)
	1990 Report (Fcst) ($M)	1991 Report (Fcst) ($M)	Variance from 1990 Report ($M)	Variance from 1990 Report (%)	1990 Report (Fcst) ($M)	1991 Report (Fcst) ($M)	Variance from 1990 Report ($M)	Variance from 1990 Report (%)		
Total Processing Market	17,028	17,023	-5	0	26,575	24,650	-1,925	-7	9	8
Vert. Indus. Mkts.	10,874	11,441	567	5	16,873	15,993	-880	-5	9	7
Discrete Mfg.	795	795	0	0	1,064	994	-70	-7	6	5
Process Mfg.	678	681	-3	0	882	853	-29	-3	5	5
Transportation	2,030	2,030	0	0	3,561	2,758	-803	-22	11	8
Utilities	201	201	0	0	333	367	34	10	11	14
Telecom.	733	895	162	22	1,473	1,785	312	21	15	15
Retail Distr.	165	165	0	0	254	226	-28	-11	9	7
Wholesale Distr.	289	289	0	0	445	419	-26	-6	9	8
Banking & Finance	3,275	3,100	-175	-5	5,718	4,646	-1,072	-19	12	8
Insurance	351	351	0	0	566	495	-71	-13	10	7
Medical	500	500	0	0	644	632	-12	-2	5	5
Education	185	185	0	0	215	213	-2	-1	3	3
Business Services	787	1,362	575	73	895	1,807	912	102	3	2
Federal Govt.	200	200	0	0	240	213	-27	-11	4	3
State & Local Govt.	255	257	2	1	450	453	3	1	12	12
Misc. Industries	148	148	0	0	134	132	-2	-1	-2	-2
Cross-Indus. Mkts.	3,229	2,654	-575	-18	4,363	3,476	-887	-20	6	5
Accounting	721	146	-575	-80	789	170	-619	-78	2	3
Edu. & Training	95	95	0	0	74	73	-1	-1	-5	-6
Eng. & Scientific	123	123	0	0	150	131	-19	-13	4	1
Human Resources	1,523	1,523	0	0	2,453	2,310	-143	-6	10	8
Office Systems	38	38	0	0	29	28	-1	-3	-5	-6
Planning & Analysis	205	205	0	0	118	114	-4	-3	-10	-12
Other Cross-Indus.	525	525	0	0	749	650	-99	-13	7	4
Generic Markets	2,925	2,928	3	0	5,338	5,181	-157	-3	13	12
Processing Svcs.										
- Utility	898	898	0	0	1,190	1,146	-44	-4	6	5
- Other	2,027	2,030	3	0	4,148	4,035	-113	-3	15	15

- In 1990, INPUT created a new industry sector—customer services. It included the reservation services activities that had been part of the transportation industry. After further review it was decided with INPUT clients that this caused confusion. Accordingly, for 1991 the customer services sector has been discontinued and the expenditures tracked in this sector moved back to the transportation industry. Some expenditures were moved to business services also.

There were two sizable differences between forecasts and actual results for 1990 in vertical industry markets.

- Banking and finance expenditures were 5% below estimates, due to the economic downturn and consolidations in the industry.

- Telecommunications results were up by 22% over forecast, due to the effects of increased network use and restructuring of work.

The transaction processing market for industry applications is forecast to grow between 1990 and 1995 at a rate 2% below last year's forecast on an overall basis.

- Not counting the elimination of the consumer services industry sector, 14 industry and cross-industry markets show decreases in forecasts from 1990 to 1995 in comparison to the previous forecast, due to two factors in general: the movement of some transaction processing work in-house to downsized processing capabilities on LANs and smaller computing capabilities, and the shrinkage of work due to continuing economic problems.

- Most industry markets are down by 1% or 2% in forecasts for 1990 relative to previous forecasts, but several are down by more. Transportation and insurance markets are growing at rates 3% below the last forecast, and banking and finance is growing at a rate 4% below the last forecast. These industries have been hit very hard by the economic downturn and there has been consolidation of firms.

- The cross-industry engineering and scientific and other markets also have forecasts that are 3% below previous forecasts, due principally to the movement of work in-house. Continuing economic problems have enhanced interest in moving work in-house when it can lead to near-term savings.

Telecommunications and state and local government industry sectors are forecast to maintain high growth rates due to the expansion of work in these markets. The utilities market is forecast to grow at a rate 3% higher than the previous forecast due to the growth of certain applications, particularly GIS (geographical information system)-related applications.

The "other" processing services market will retain its high growth rate of 15% due to increasing interest in disaster recovery services. Utility processing services will shrink by only 1% from the previous forecast due to:

- The continuing interest in running special jobs such as scientific jobs at vendor sites rather than having the necessary equipment and software products in-house.
- The growing interest in testing applications software products on vendor processing capabilities before installing them in-house.

In 1990 INPUT made a considerable change to the processing services market in the previous forecast by introducing the new delivery mode of systems operations. This mode was created by taking the systems operations submode out of both processing and professional services to account for the different and expanding type of service that was being delivered through systems operations. This service involves handling all the processing for a company or department on a contractual basis for a period longer than a year. Please consult the report, *U.S. Systems Operations Market, 1991-1996*.

The effects of this change were handled in the analysis in last year's report and are not reflected in the exhibits in this appendix.

About INPUT

INPUT provides planning information, analysis, and recommendations for the information technology industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions.

Subscription services, proprietary research/consulting, merger/acquisition assistance, and multiclient studies are provided to users and vendors of information systems and services. INPUT specializes in the software and services industry which includes software products, systems operations, processing services, network services, systems integration, professional services, turnkey systems, and customer services. Particular areas of expertise include CASE analysis, information systems planning, and outsourcing.

Many of INPUT's professional staff members have more than 20 years' experience in their areas of specialization. Most have held senior management positions in operations, marketing, or planning. This expertise enables INPUT to supply practical solutions to complex business problems.

Formed as a privately held corporation in 1974, INPUT has become a leading international research and consulting firm. Clients include more than 100 of the world's largest and most technically advanced companies.

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